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LED LCD TV SERVICE MANUAL

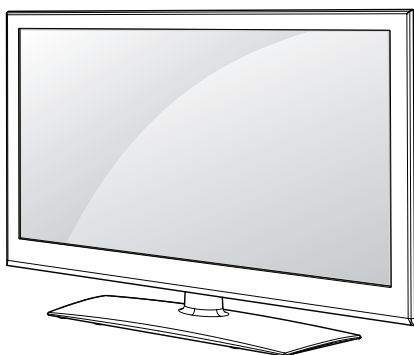
CHASSIS : LD03X

MODEL : 42LV375H

42LV375H-ZA

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL63263134 (1105-REV00)

Printed in Korea

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle in the Schematic Diagram and Exploded View.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer** should always be used during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 M Ω and 5.2 M Ω .

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

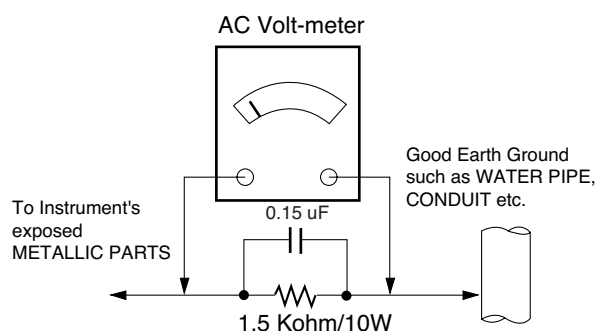
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 μ F capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5 mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω

*Base on Adjustment standard

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This specification is applied to the LCD TV used LD03X chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

- 1) Temperature: 25 °C ± 5 °C(77 °F ± 9 °F), CST: 40 °C ± 5 °C
- 2) Relative Humidity : 65 % ± 10 %
- 3) Power Voltage
 - : Standard input voltage (AC 100-240 V~, 50 / 60 Hz)
 - * Standard Voltage of each products is marked by models.
- 4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
- 5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

- 1) Performance: LGE TV test method followed
- 2) Demanded other specification
 - Safety : CE, IEC specification
 - EMC :CE, IEC

4. Module General Specification

No.	Item	Specification		Remark
1	Display Screen Device	107 cm(42 inch) wide color display module		
2	Aspect Ratio	16:9		
3	LCD Module	107 cm(42 inch) TFT LCD FHD 50 Hz		
4	Operating Environment	Temp. : 0 deg ~ 50 deg		
		Humidity : 10 % ~ 90 %		
5	Storage Environment	Temp. : -20 deg ~ 60 deg		
		Humidity : 10 ~ 90 %		
6	Input Voltage	AC 100-240 V~, 50 / 60 Hz		
7	Power Consumption	Power on (White)		
		LGD	Typ : 91.3	
8	Module Size	968.4(H) x 564(V) x 10.8(B)/18.3 mm(D)		With inverter
9	Pixel Pitch	0.4845 mm x 0.4845 mm		
10	Back Light	EDGE LED		
11	Display Colors	16.7 M colors		
12	Coating	3H(Hard coating), AG		

5. Module optical specification

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		89			CR > 10
2.	Luminance	Luminance (cd/m ²)		290	360		
		Variation			-	1.3	MAX /MIN
3.	Contrast Ratio	CR		1000	1400		
4.	CIE Color Coordinates	White	Wx	Typ. -0.03	0.279	Typ. +0.03	
			Wy		0.292		
		RED	Rx		0.637		
			Ry		0.341		
		Green	Gx		0.325		
			Gy		0.600		
		Blue	Bx		0.152		
			By		0.051		

- 1) Standard Test Condition (The unit has been 'ON')
- 2) Stable in a dark environment at 25 °C ± 2 °C.
- 3) Operating Ambient Humidity : Min 10, max 90 %RH
- 4) Ta= 25 °C ± 2 °C, VLCD= 12.0 V, fV= 60 Hz

6. Component Video Input (Y, C_B/P_B, C_R/P_R)

No.	Specification				Remark
	Resolution	H-freq(kHz)	V-freq(Hz)		
1.	720x480	15.73	60.00	SDTV,DVD 480i	
2.	720x480	15.63	59.94	SDTV,DVD 480i	
3.	720x480	31.47	59.94	480p	
4.	720x480	31.50	60.00	480p	
5.	720x576	15.625	50.00	SDTV,DVD 625 Line	
6.	720x576	31.25	50.00	HDTV 576p	
7.	1280x720	45.00	50.00	HDTV 720p	
8.	1280x720	44.96	59.94	HDTV 720p	
9.	1280x720	45.00	60.00	HDTV 720p	
10.	1920x1080	31.25	50.00	HDTV 1080i	
11.	1920x1080	33.75	60.00	HDTV 1080i	
12.	1920x1080	33.72	59.94	HDTV 1080i	
13.	1920x1080	56.250	50	HDTV 1080p	
14.	1920x1080	67.5	60	HDTV 1080p	

7. RGB (PC)

No.	Specification				Proposed	Remarks
	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel Clock(MHz)		
1.	720*400	31.468	70.08	28.321		For only DOS mode
2.	640*480	31.469	59.94	25.17	VESA	Input 848*480 60 Hz, 852*480 60 Hz -> 640*480 60 Hz Display
3.	800*600	37.879	60.31	40.00	VESA	
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	
5.	1280*768	47.78	59.87	79.5	WXGA	
6.	1360*768	47.72	59.8	84.75	WXGA	
7.	1280*1024	63.595	60.0	108.875	SXGA	FHD model
8.	1920*1080	66.587	59.93	138.625	WUXGA	FHD model

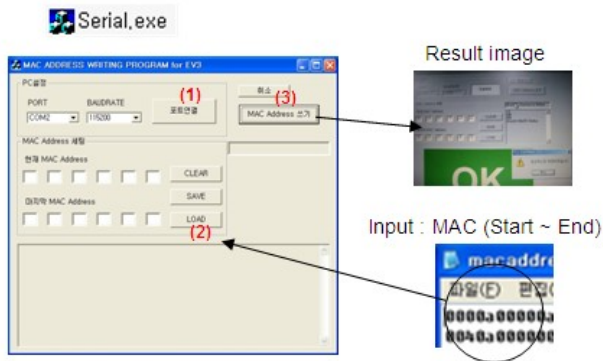
8. HDMI Input (1) DTV Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*480	31.469 /31.5	59.94 /60	27.00/27.03	SDTV 480P	
2.	720*576	31.25	50	54	SDTV 576P	
3.	1280*720	37.500	50	74.25	HDTV 720P	
4.	1280*720	44.96 /45	59.94 /60	74.17/74.25	HDTV 720P	
5.	1920*1080	33.72 /33.75	59.94 /60	74.17/74.25	HDTV 1080I	
6.	1920*1080	28.125	50.00	74.25	HDTV 1080I	
7.	1920*1080	26.97 /27	23.97 /24	74.17/74.25	HDTV 1080P	
8.	1920*1080	33.716 /33.75	29.976 /30.00	74.25	HDTV 1080P	
9.	1920*1080	56.250	50	148.5	HDTV 1080P	
10.	1920*1080	67.43 /67.5	59.94 /60	148.35/148.50	HDTV 1080P	

(2) PC Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*400	31.468	70.08	28.321		HDCP
2.	640*480	31.469	59.94	25.17	VESA	HDCP
3.	800*600	37.879	60.31	40.00	VESA	HDCP
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	HDCP
5.	1280*768	47.78	59.87	79.5	WXGA	HDCP
6.	1360*768	47.72	59.8	84.75	WXGA	HDCP
7.	1280*1024	63.595	60.0	108.875	SXGA	HDCP/FHD model
8.	1920*1080	67.5	60.00	138.625	WUXGA	HDCP/FHD model

- 2) MAC Address Download
 - Com 1,2,3,4 and 115200(Baud rate)
 - Click "Port connection" button(1).

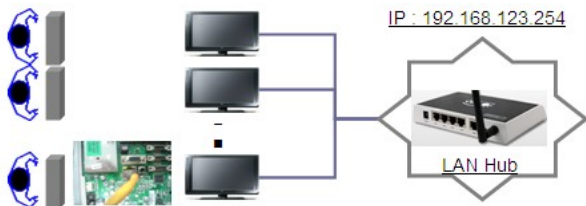


- Click "Load" button(2) for MAC Address write.
- Click "MAC Address write" button(3)
- Check the OK Or NG.

3.3. LAN

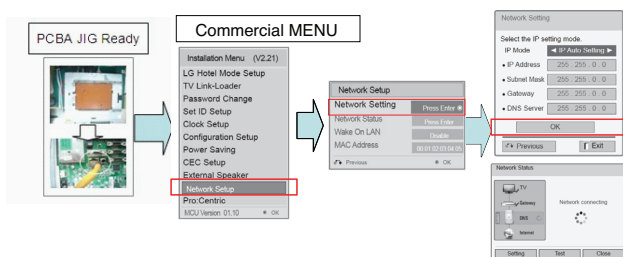
- (1) Equipment & Condition

- Each other connection to LAN Port of IP Hub and Jig



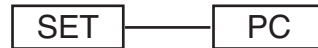
- (2) LAN inspection solution

- LAN Port connection with PCB
- Network setting at MENU Mode of Installation Menu
 - "In-start" key input -> "menu" key input -> Installation Menu
 - Network Setup -> Network Setting --> Press "Enter" -> IP Auto Setting -> OK
- setting automatic IP
- Setting state confirmation
 - > If automatic setting is finished, you confirm IP and MAC Address.



3.4. LAN PORT INSPECTION(PING TEST)

Connect SET -> LAN port == PC -> LAN Port



- (1) Equipment setting
 - 1) Play the LAN Port Test PROGRAM.
 - 2) Input IP set up for an inspection to Test Program.
 - *IP Number : 12.12.2.2
- (2) LAN PORT inspection (PING TEST)
 - 1) Play the LAN Port Test Program.
 - 2) Connect each other LAN Port Jack.
 - 3) Play Test (F9) button and confirm OK Message.
 - 4) Remove LAN cable.



3.5. Model name & serial number download

- (1) Model name & Serial number D/L

- Press "Power on" key of service remote control. (Baud rate : 115200 bps)
- Connect RS232 Signal Cable to RS-232 Jack.
- Write Serial number by use RS-232.
- Must check the serial number at Instart menu.

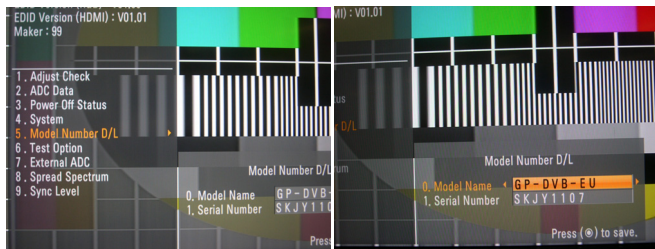
- (2) Method & notice

- A. Serial number D/L is using of scan equipment.
- B. Setting of scan equipment operated by Manufacturing Technology Group.
- C. Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0.

- * Manual Download (Model Name and Serial Number)

If the TV set is downloaded by OTA or service man, sometimes model name or serial number is initialized.(Not always)
There is impossible to download by bar code scan, so It need Manual download.

- a. Press the 'Instart' key of Adjustment remote control.
- b. Go to the menu '5.Model Number D/L' like below photo.
- c. Input the Factory model name(ex 42LD450-ZA) or Serial number like photo.
- d. Check the model name Instart menu. -> Factory name displayed. (ex 42LE7500-ZA)
- e. Check the Diagnostics. (DTV country only) -> Buyer model displayed. (ex 42LE7500-ZA)



4. Check Commercial Features

4.1. External SPK Out and Volume control



4.1.1. Equipment & Condition

- Jig(Speaker out JIG, Speaker out control Jig) or Oscilloscope
- Power only mode

4.1.2. Check the speaker out & control

- 1) Connect the External Speaker : Check the sound.
 - 2) Press the "+" key on the control Jig : Check the Max output.
 - 3) Press the "-" key on the control Jig : Check the Min output.
- Connect oscilloscope, you can see this waveform.

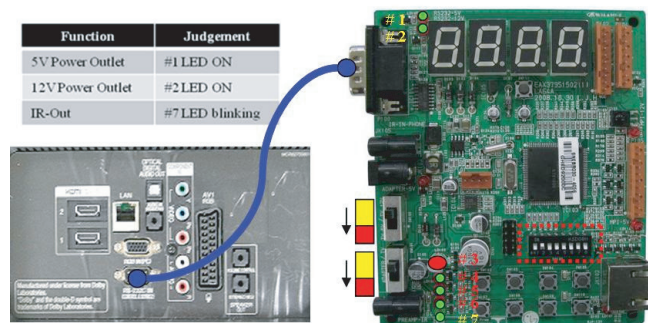
Button of Vol. control	Waveform of Oscilloscope
UP(+)	
DOWN(-)	

Recommended Input Signal
: RF, 1 KHz, Sine wave

4.2. IR Out and DC Power Outlet(5 V / 12 V)

4.2.1. Equipment & Condition

- Jig (commercial check JIG)
- Special 232C Cable for commercial check Jig
- Power only mode

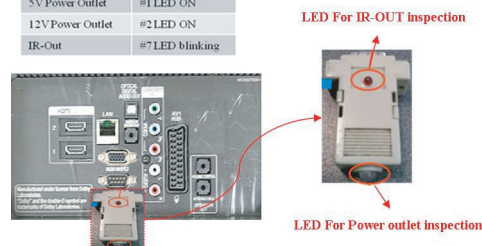


Function	Judgement
5V Power Outlet	#1 LED ON
12V Power Outlet	#2 LED ON
IR-Out	#7 LED blinking

4.2.2. Check the power out & IR out - commercial check jig

- 1) Connect each other RS232C port on the Commercial Check JIG.
- 2) Press RED Color key on Service remote control.
- 3) Check the LED of jig board.
 - +12V / +5V LED (OK condition: Turn On)
 - IR LED (OK condition: blinking)

Function	Judgement
5V Power Outlet	#1 LED ON
12V Power Outlet	#2 LED ON
IR-Out	#7 LED blinking

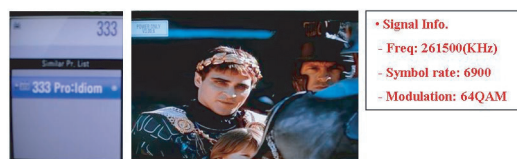


4.2.3. Check the power out & IR out - mini jig

- 1) Connect mini jig on RS232c port.
- 2) Press RED Color key on Service remote control.
- 3) Check the LED of mini jig.

4.3. Pro:Idiom

- 1) Connect the RF Cable.
 - 2) Turn to the Pro:Idiom channel (No. 333).
 - 3) Check the video & sound.
- ** Only displayed at "POWER ONLY" mode



4.4. Front LED Clock

- 1) Check the LED Clock in Power only mode.



5. Manual Adjustment

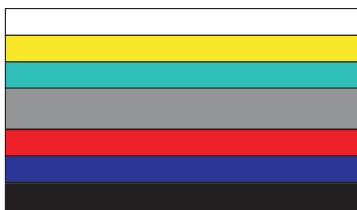
5.1. ADC Adjustment

5.1.1. Overview

ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

5.1.2. Equipment & Condition

- (1) Adjustment remote control
- (2) 801GF(802B, 802F, 802R) or MSPG925FA Pattern Generator
 - Resolution :
 - 480i, Comp1 (MSPG-925FA: Model-209, Pattern-65)
 - 1080p Comp1 (MSPG-925FA: Model: 225, Pattern-65)
 - 1080p RGB (MSPG-925FA: Model-225, Pattern-65)
 - Pattern : Horizontal 100% Color Bar Pattern
 - Pattern level: 0.7 ± 0.1 Vp-p
 - Image



- (3) Must use standard cable

5.1.3. Adjust method

- (1) ADC 480i/1080p Comp1, RGB
 - 1) Check connected condition of Comp1 cable to the equipment.
 - 2) Give a 480i, Horizontal 100% Color Bar Pattern to Comp1.(MSPG-925FA -> Model: 209, Pattern: 65)
 - 3) Change input mode as Component1 and picture mode as "Standard".
 - 4) Press the In-start Key on the ADJ remote control after at least 1 min of signal reception. Then, select '7. External ADC'. And press OK or Right key for going to sub menu.
 - 5) Press OK in Comp 480i menu.
 - 6) Give a 1080p Mode, Horizontal 100% Color Bar Pattern to Comp1. (MSPG-925A -> Model: 225, Pattern: 65)
 - 7) Press OK in Comp 1080p menu.
 - 8) Press OK in RGB menu.
 - 9) If ADC Comp is successful, "ADC Component Success" is displayed.
 - If ADC calibration is failure, "ADC Component Fail" is displayed.
 - 10) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration
 - 11) If ADC RGB is successful, "ADC RGB Success" is displayed. If ADC calibration is failure, "ADC RGB Fail" is displayed.
 - 12) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration Error message refer to 5).

5.2. EDID(The Extended Display Identification Data)/DDC(Display Data Channel) download

(1) Overview

It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of "Plug and Play".

(2) Equipment




- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.
- Adjustment remote control

(3) Download method

- 1) Press ADJ key on the Adjustment remote control
- 2) Select EDID D/L menu.
- 3) By pressing Enter key, EDID download will begin.
- 4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
- 5) If Download is failure, Re-try download.

<Caution>

When EDID Download, must remove RGB/HDMI Cable.

For Analog EDID	For HDMI EDID	
D-sub to D-sub	DVI-D to HDMI or HDMI to HDMI	
		

(4) EDID DATA

■ HDMI

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D						
0x01			01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20				
0x07															01	
0x08	02	03	26	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0x09	22	15	01	26	15	07	50	09	57	07	67					
0x0A			E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
0x0B	25	00	A0	5A	00	00	00	9E	01	1D	00	80	51	D0	1A	20
0x0C	6E	88	55	00	A0	5A	00	00	00	1A	02	3A	80	18	71	38
0x0D	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	66	21	50	B0
0x0E	51	00	1B	30	40	70	36	00	A0	5A	00	00	00	00	1E	00
0x0F	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	2

■ RGB

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D						
0x01			01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20				
0x07															00	3

* Address 10/11 and 7F means Manufacture Week and Checksum. So this data will be change.

■ Detail EDID Options are below (, , , , ,)
Product ID

Model Name	HEX	EDID Table	DDC Function
FHD Model	0001	01 00	Analog
	0001	01 00	Digital

Serial No. : Controlled on product line
Month, Year: Controlled on production line:
ex) Monthly : '01' -> '01'
Year : '2010' -> '14'

Model Name(Hex):

MODEL	MODEL NAME(HEX)
LG TV	00 00 00 FC 00 4C 47 20 54 56 0A 20 20 20 20 20 20

Checksum: Changeable by total EDID data.

FHD	1	2	3
HDMI1	D7	11	X
HDMI2	D7	01	X
RGB	X	X	1D

Vendor Specific(HDMI)_FHD Model

INPUT	MODEL NAME(HEX)
HDMI1	67 03 0C 00 10 00 B8 2D
HDMI2	67 03 0C 00 20 00 B8 2D

5.3. White Balance Adjustment

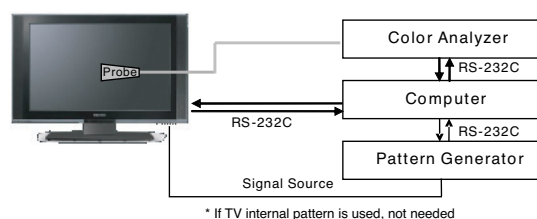
5.3.1. Overview

- (1) W/B adj. Objective & How-it-works
- (2) Objective: To reduce each Panel's W/B deviation
- (3) How-it-works : When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.
- (4) Adj. condition : normal temperature
 - 1) Surrounding Temperature : 25 °C ± 5 °C
 - 2) Warm-up time: About 5 Min
 - 3) Surrounding Humidity : 20 % ~ 80 %

5.3.2. Equipment

- 1) Color Analyzer: CA-210 (CCFL/EEFL -> CH 9)
 - 2) Adj. computer(During auto adj., RS-232C protocol is needed)
 - 3) Adjustment remote control
 - 4) Video Signal Generator MSPG-925F 720p/216-Gray (Model:217, Pattern:78)
-> Only when internal pattern is not available
- Color Analyzer Matrix should be calibrated using CS-1000.

5.3.3. Equipment connection MAP



5.3.4. Adj. Command (Protocol)

■ RS-232C Command used during auto-adj.

RS-232C COMMAND [CMD ID DATA]			Explanation
wb	00	00	Begin White Balance adj.
wb	00	10	Gain adj.(internal white pattern)
wb	00	1f	Gain adj. completed
wb	00	20	Offset adj.(internal white pattern)
wb	00	2f	Offset adj. completed
wb	00	ff	End White Balance adj.(Internal pattern disappears)

Ex) wb 00 00 -> Begin white balance auto-adj.
wb 00 10 -> Gain adj.
ja 00 ff -> Adj. data
jb 00 c0

...

wb 00 1f -> Gain adj. completed

*(wb 00 20(Start), wb 00 2f(completed)) -> Off-set adj.
wb 00 ff -> End white balance auto-adj.

■ Adj. Map

	ITEM	Command		Data Range (Hex.)		Default (Decimal)
		Cmd 1	Cmd 2	Min	Max	
Cool	R-Gain	j	g	00	C0	
	G-Gain	j	h	00	C0	
	B-Gain	j	i	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Medium	R-Gain	j	a	00	C0	
	G-Gain	j	b	00	C0	
	B-Gain	j	c	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Warm	R-Gain	j	d	00	C0	
	G-Gain	j	e	00	C0	
	B-Gain	j	f	00	C0	
	R-Cut					
	G-Cut					

5.3.5. Adj. method

- (1) Auto adj. method
 - 1) Set TV in adj. mode using POWER ON key.
 - 2) Zero calibrate probe then place it on the center of the Display.
 - 3) Connect Cable (RS-232C).
 - 4) Select mode in adj. Program and begin adjustment.
 - 5) When adj. is complete (OK Sign), check adj. status pre mode. (Warm, Medium, Cool)
 - 6) Remove probe and RS-232C cable to complete adj..

■ W/B Adj. must begin as start command "wb 00 00", and finish as end command "wb 00 ff", and Adj. offset if need.

(2) Manual adj. method

- 1) Set TV in Adj. mode using POWER ON.
- 2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10 cm of the surface.
- 3) Press ADJ key -> EZ adjust using adjustment remote control. -> White-Balance then press the cursor to the right key(▶). (When Key(▶) is pressed 216 Gray internal pattern will be displayed)
- 4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.
- 5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

■ If internal pattern is not available, use RF input. In EZ Adj. menu 6.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 216 Gray pattern.

■ Adj. condition and cautionary items

- 1) Lighting condition in surrounding area
Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.
- 2) Probe location: Color Analyzer(CA-210) probe should be within 10 cm and perpendicular of the module surface. (80° ~ 100°)
- 3) Aging time
- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.3.6. Reference (White Balance Adj. coordinate and temperature)

■ Luminance : 216 Gray

■ Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269	0.273	13000 K	0.0000
MEDIUM	0.285	0.293	9300 K	0.0000
WARM	0.313	0.329	6500 K	0.0000

■ Standard color coordinate and temperature using CA-210(CH 9)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269 ± 0.002	0.273 ± 0.002	13000 K	0.0000
MEDIUM	0.285 ± 0.002	0.293 ± 0.002	9300 K	0.0000
WARM	0.313 ± 0.002	0.329 ± 0.002	6500 K	0.0000

■ Edge LED W/B Table in process of time(Only LGD module)
CA210 : CH 14, Test signal : Inner pattern(80 IRE)

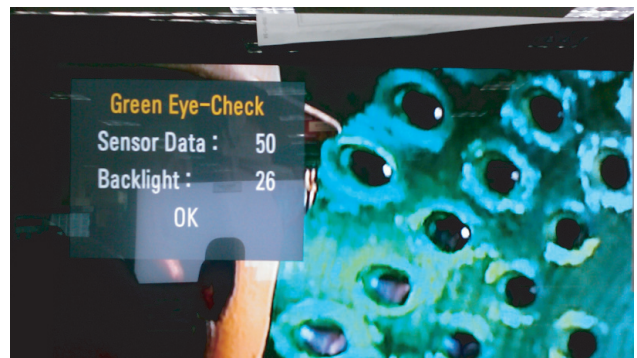
GP2	Aging Time (Min.)	Cool		Medium		Warm	
		X	Y	X	Y	X	Y
		269	273	285	293	313	329
1	0-2	279	288	295	308	319	338
2	3-5	278	286	294	306	318	336
3	6-9	277	285	293	305	317	335
4	10-15	276	283	292	303	316	333
5	20-35	274	280	290	300	314	330
6	36-49	272	277	288	297	312	327
7	50-79	271	275	287	295	311	325
8	80~149	270	274	286	294	310	324
9	Over~150	269	273	285	293	309	323

5.4. HDCP(High-bandwidth Digital Contents Protection) SETTING

- HDCP setting is not necessary in BCM model.

5.5. EYE-Q function check

- Step 1) Turn on TV.
- Step 2) Press EYE key of Adjustment remote control.
- Step 3) Cover the Eye Q II sensor on the front of the using your hand and wait for 6 seconds.
- Step 4) Confirm that R/G/B value is lower than 10 of the "Raw Data (Sensor data, Back light)". If after 6 seconds, R/G/B value is not lower than 10, replace Eye Q II sensor.
- Step 5) Remove your hand from the Eye Q II sensor and wait for 6 seconds.
- Step 6) Confirm that "ok" pop up. If change is not seen, replace Eye Q II sensor.



5.6. Tool Option selection

- Method : Press ADJ key on the Adjustment remote control, then select Tool option.

MODEL	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5
42LV375H	25953	12834	55332	22797	1059

5.7. Ship-out mode check(In-stop)

After final inspection, press IN-STOP key of the Adjustment remote control and check that the unit goes to Stand-by mode.
After final inspection, Always turn on the Mechanical S/W.

6. GND and Internal Pressure check

6.1. Method

- 1) GND & Internal Pressure auto-check preparation
 - Check that Power Cord is fully inserted to the SET.
(If loose, re-insert)
- 2) Perform GND & Internal Pressure auto-check
 - Unit fully inserted Power cord, Antenna cable and A/V arrive to the auto-check process.
 - Connect D-terminal to AV JACK TESTER.
 - Auto CONTROLLER(GWS103-4) ON
 - Perform GND TEST.
 - If NG, Buzzer will sound to inform the operator.
 - If OK, changeover to I/P check automatically.
(Remove CORD, A/V form AV JACK BOX)
 - Perform I/P test
 - If NG, Buzzer will sound to inform the operator.
 - If OK, Good lamp will lit up and the stopper will allow the pallet to move on to next process.

6.2. Checkpoint

- TEST voltage
 - GND: 1.5 KV/min at 100 mA
 - SIGNAL: 3 KV/min at 100 mA
- TEST time: 1 second
- TEST POINT
 - GND TEST = POWER CORD GND & SIGNAL CABLE METAL GND
 - Internal Pressure TEST = POWER CORD GND & LIVE & NEUTRAL
- LEAKAGE CURRENT: At 0.5 mArms

7. Audio

No.	Item	Min.	Typ.	Max.	Unit	
1.	Audio practical max Output, L/R (Distortion=10% max Output)	9.0	10.0	12.0	W	EQ Off AVL Off
		8.5	8.9	9.8	Vrms	Clear Voice Off
2.	Speaker (8 Ω Impedance)		10.0	15.0	W	EQ On AVL On Clear Voice On

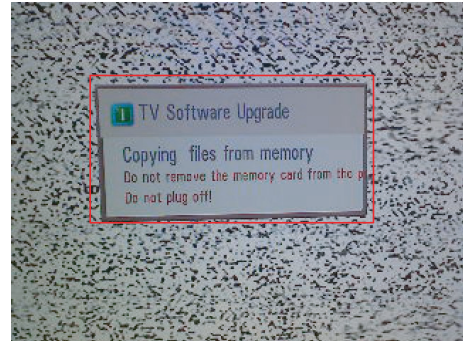
Measurement condition:

1. RF input: Mono, 1 KHz sine wave signal, 100 % Modulation
2. CVBS, Component: 1 KHz sine wave signal 0.4 Vrms
3. RGB PC: 1 KHz sine wave signal 0.7 Vrms

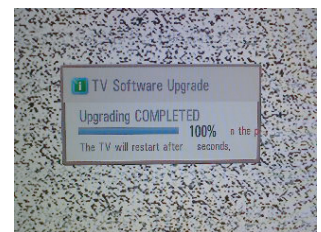
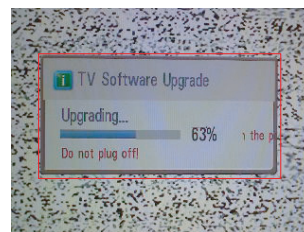
8. USB S/W Download

(option, Service only)

- 1) Put the USB Stick to the USB socket
- 2) Automatically detecting update file in USB Stick
 - If your downloaded program version in USB Stick is Low, it didn't work. But your downloaded version is High, USB data is automatically detecting
- 3) Show the message "Copying files from memory"



- 4) Updating is starting.



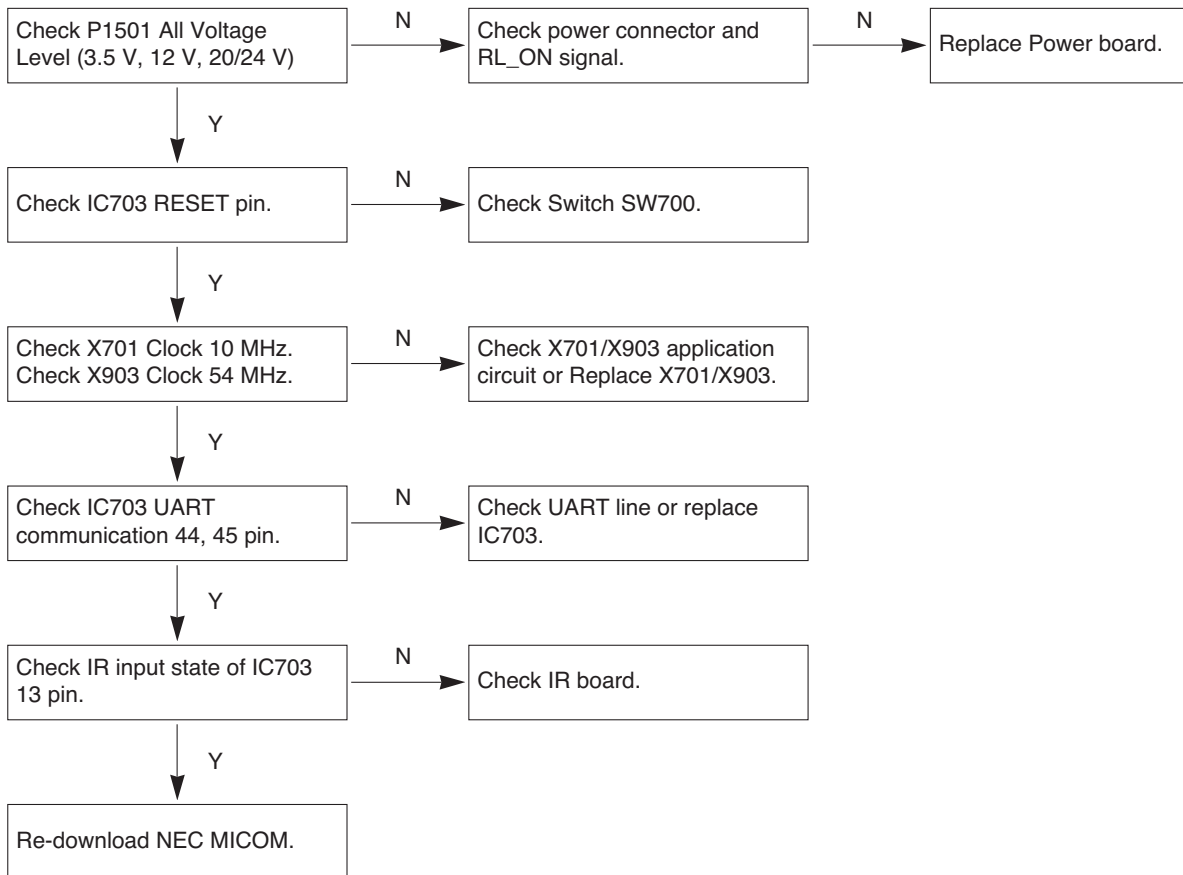
- 5) Updating Completed, The TV will restart automatically
- 6) If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)
 - * If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

* After downloading, have to adjust TOOL OPTION again.

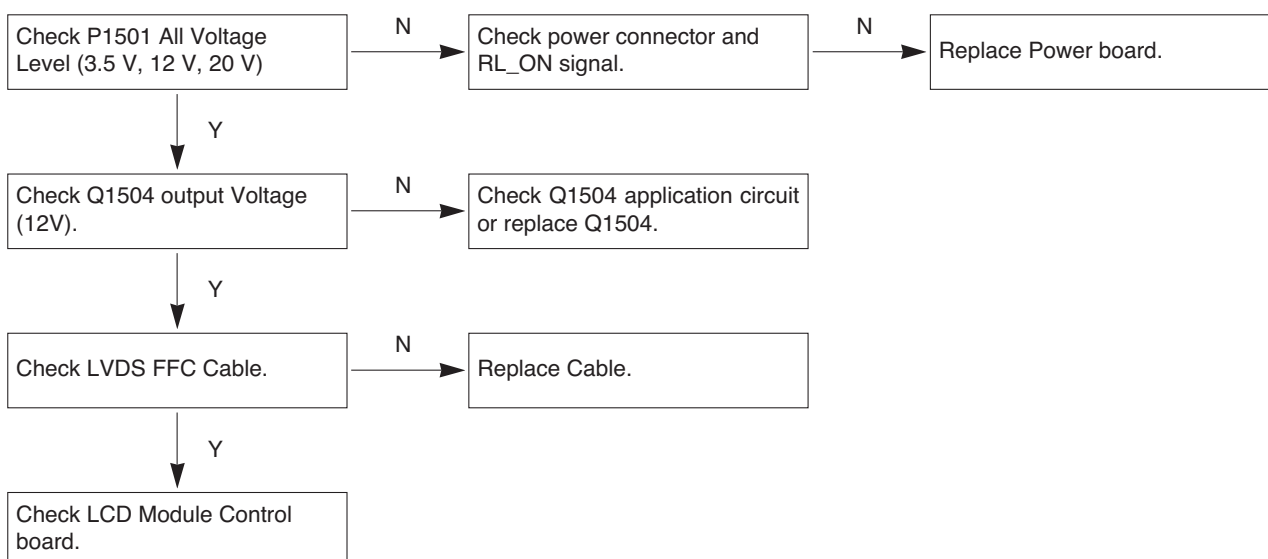
1. Push "IN-START" key in service remote control.
2. Select "Tool Option 1" and push "OK" key.
3. Punch in the number. (Each model has their number.)

TROUBLE SHOOTING GUIDE

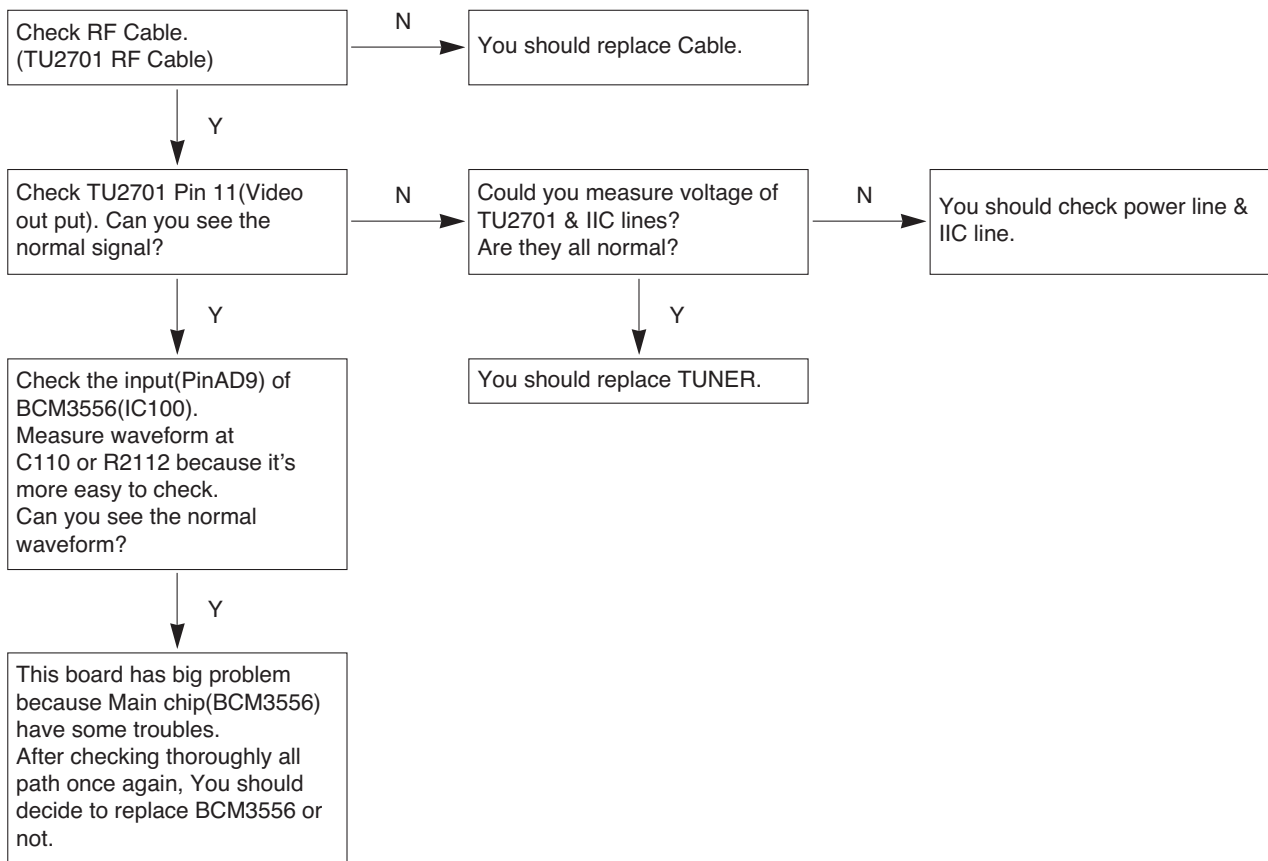
1. Power-Up Boot Fail Trouble Shooting guide



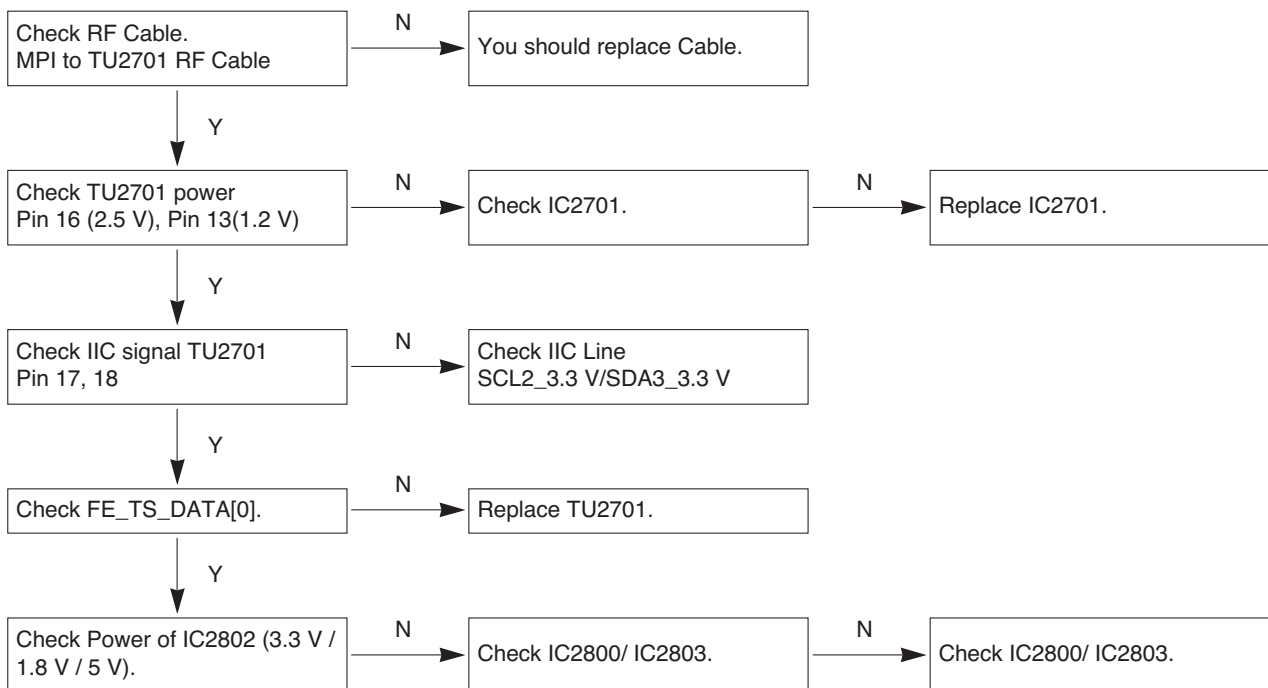
2. No OSD Trouble Shooting guide



3. Analog RF Video Troubleshooting guide

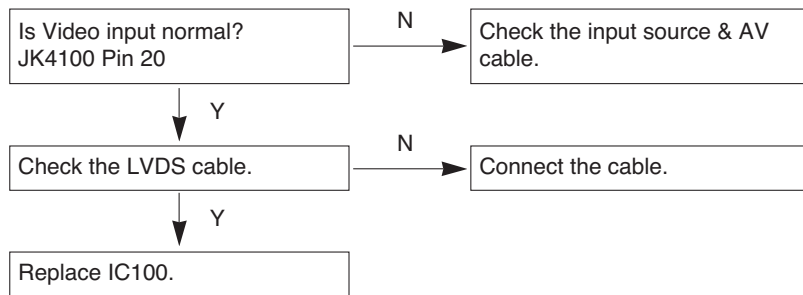


4. Digital RF Troubleshooting guide

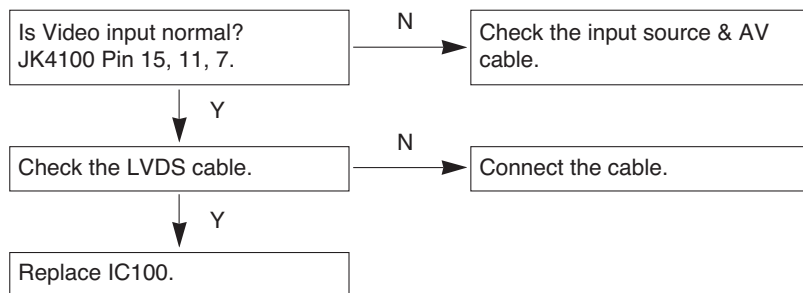


5. AV1(SCART) Video Trouble Shooting guide

- CVBS input

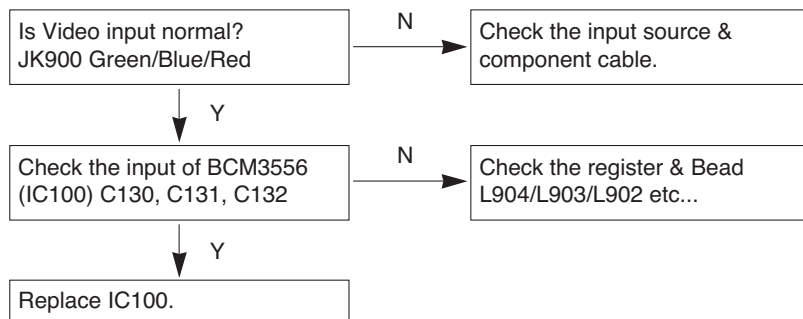


- RGB input

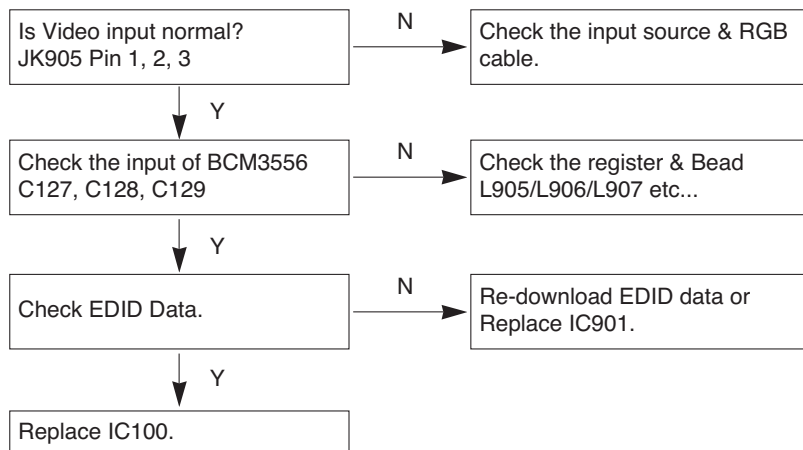


6. Component/RGB Video Trouble Shooting guide

- Component input

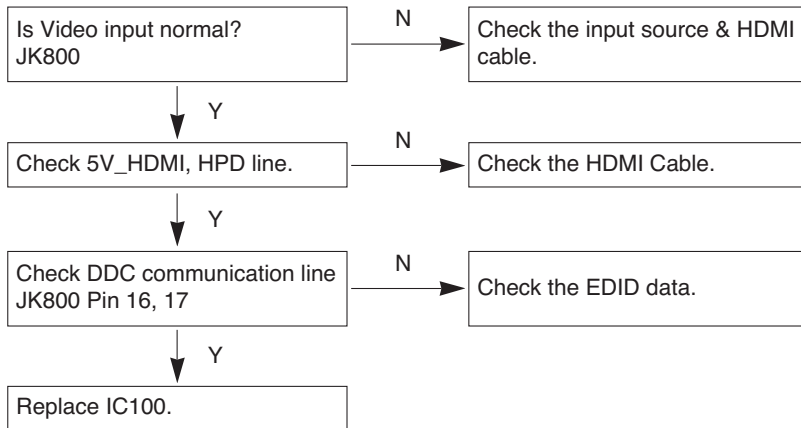


- RGB input

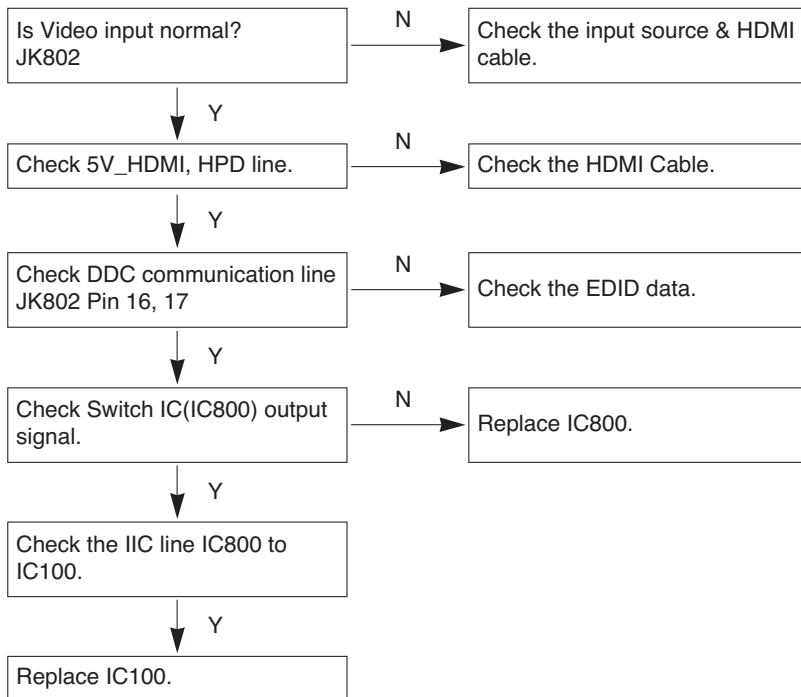


7. HDMI 1/ 2 Video Trouble Shooting guide

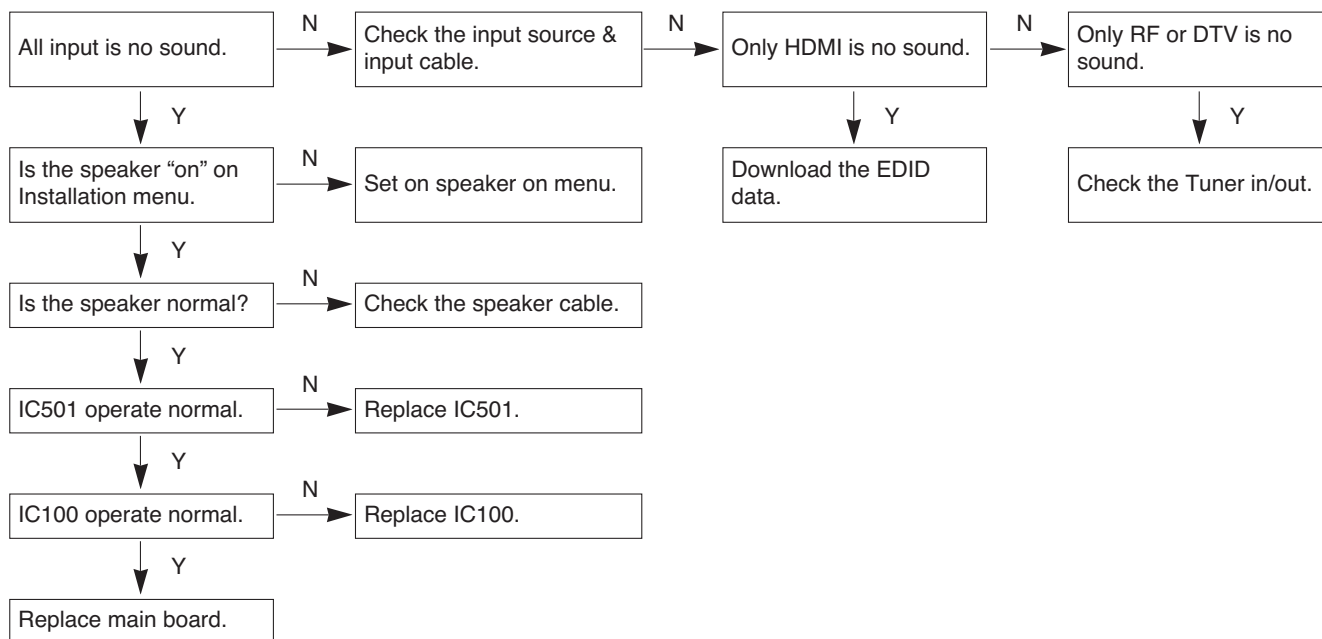
- HDMI 1



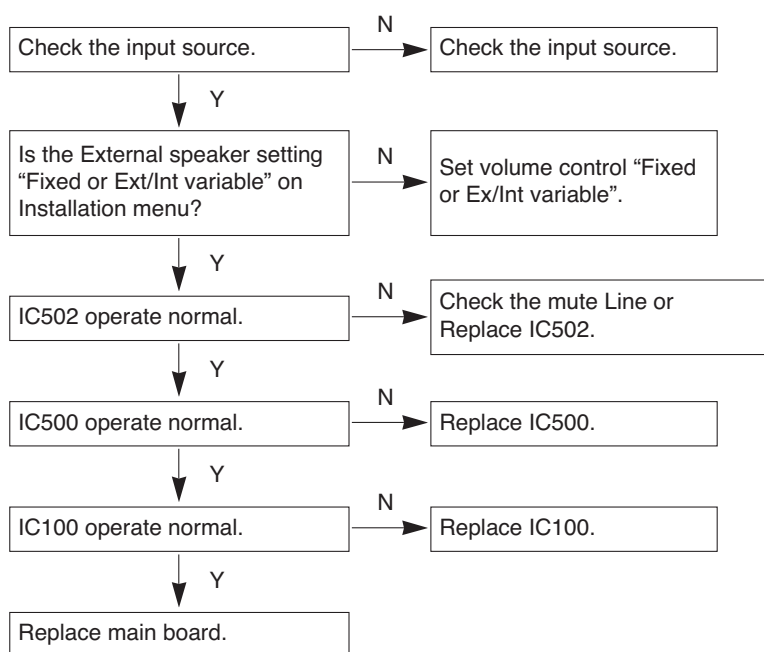
- HDMI 2



8. Audio Trouble Shooting guide

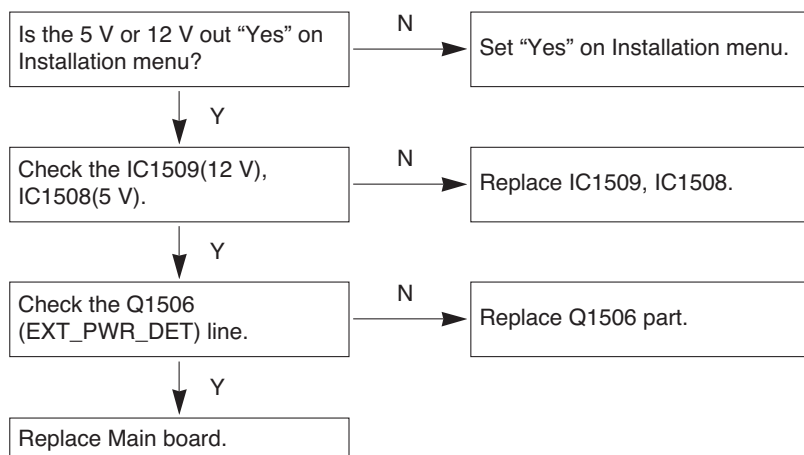


9. External Speaker out Trouble Shooting guide

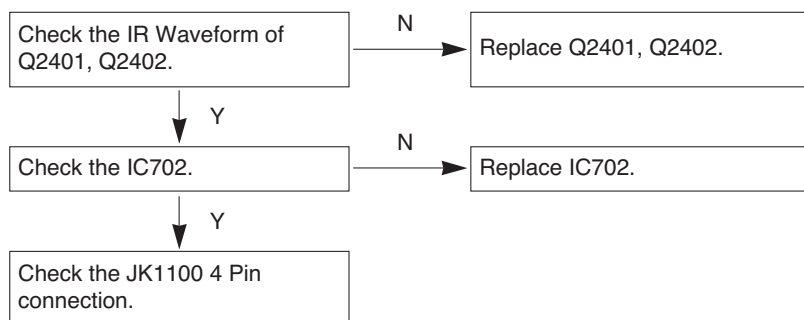


10. RS-232C(DSUB 9P) function Trouble Shooting guide

- Ext Power Out

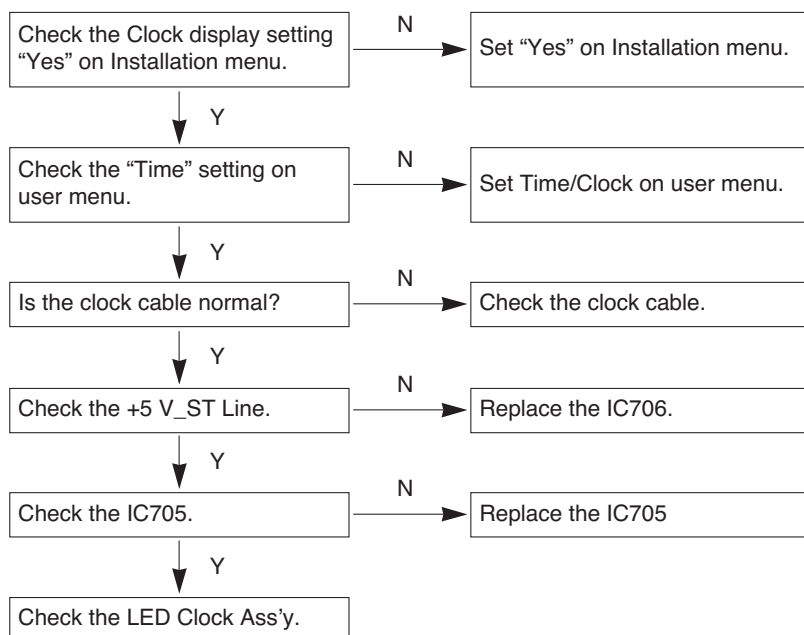


- IR Out

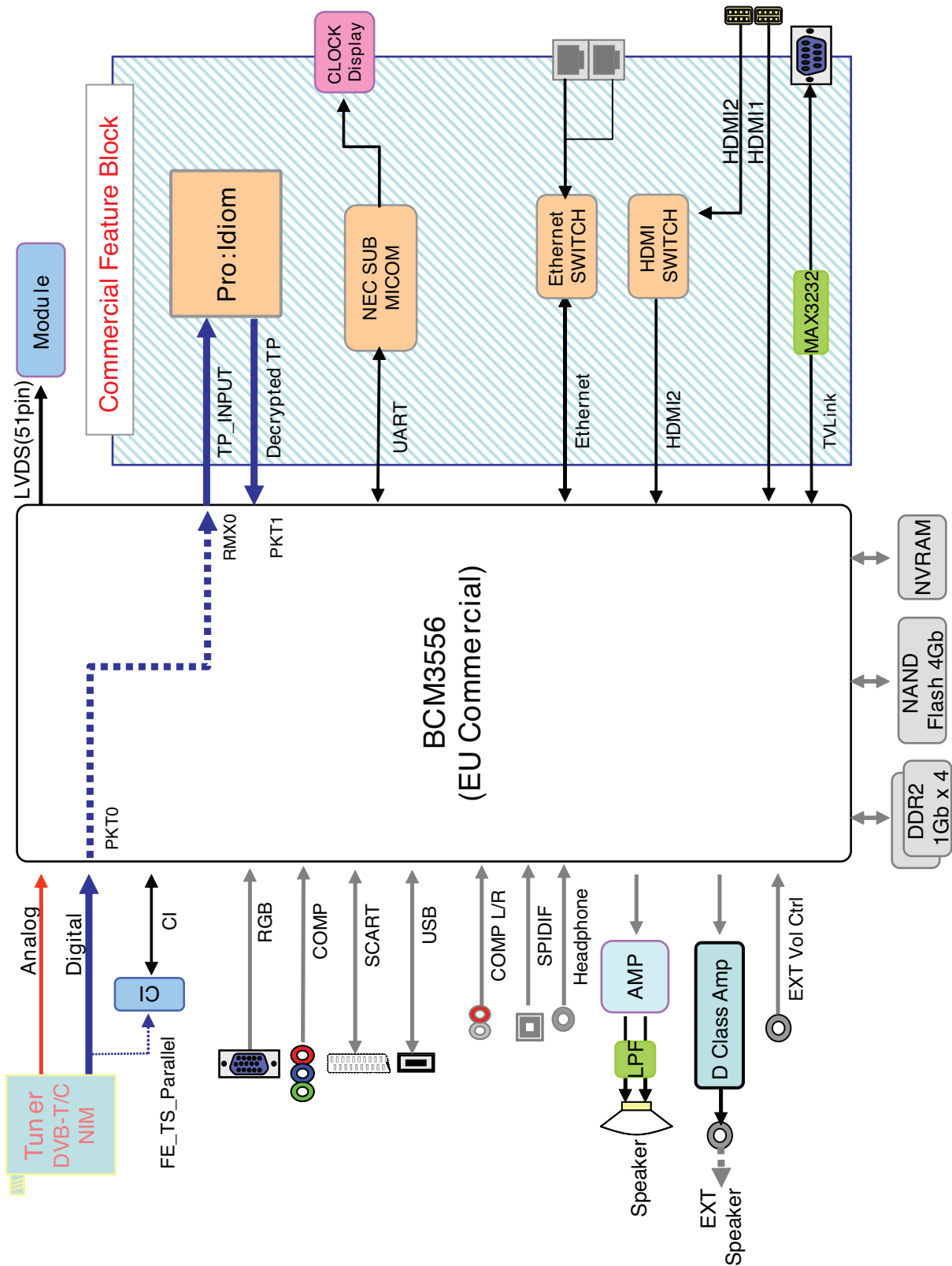


11. Commercial Function Trouble Shooting guide

- Front Clock



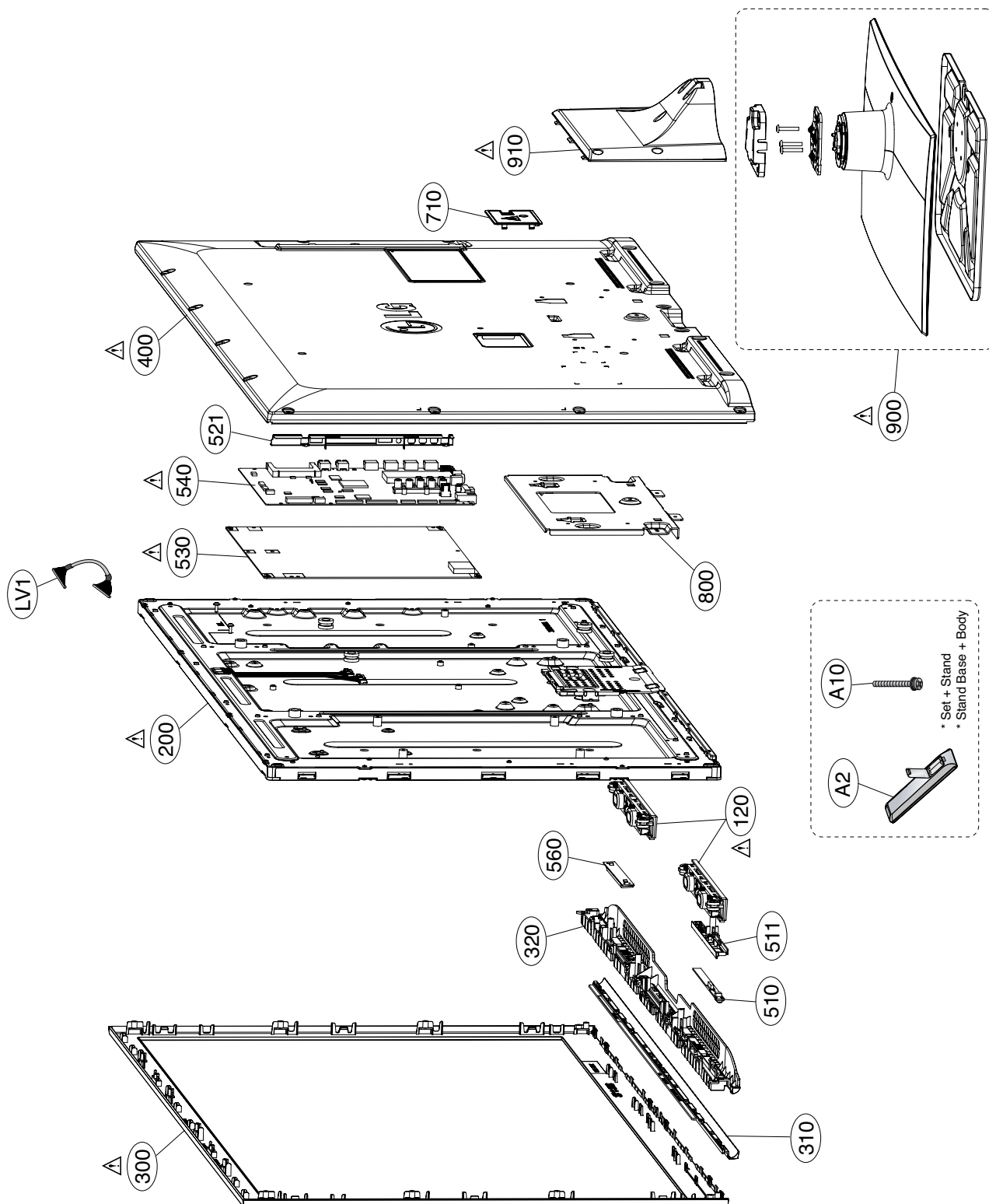
BLOCK DIAGRAM

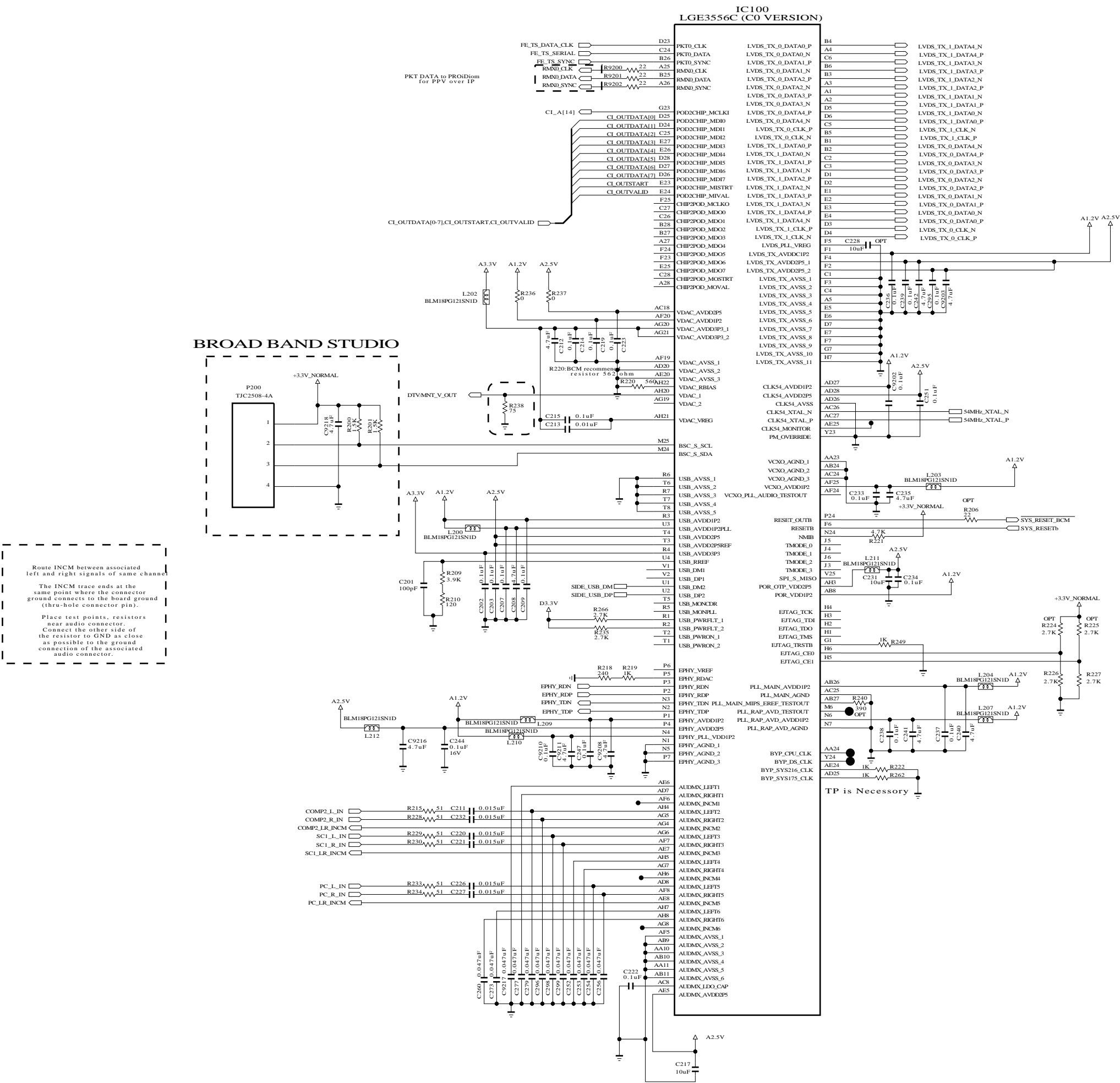


EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by Δ in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.





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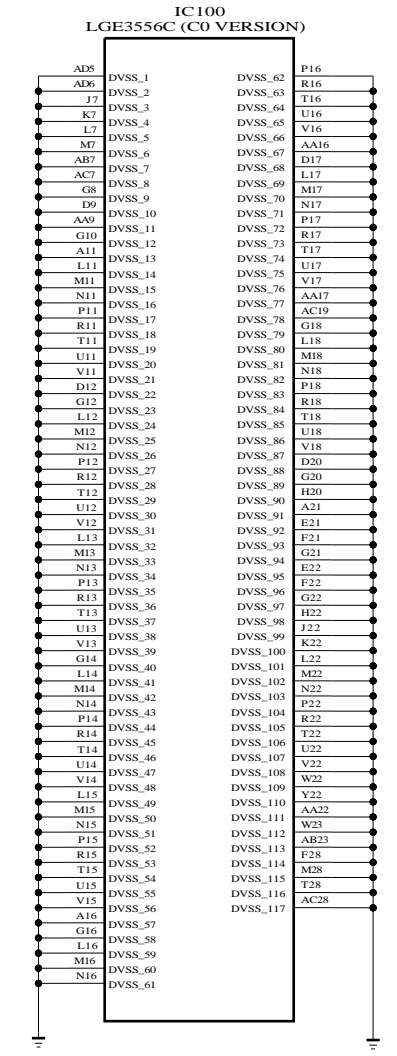
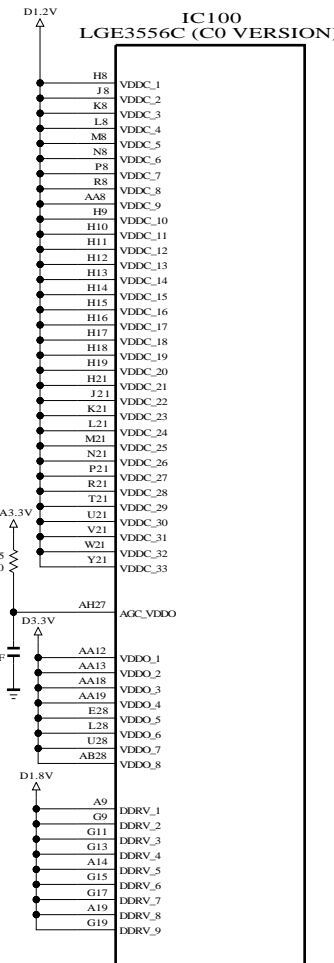
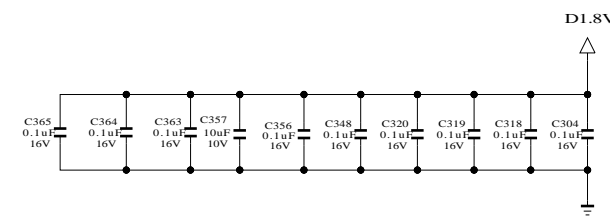
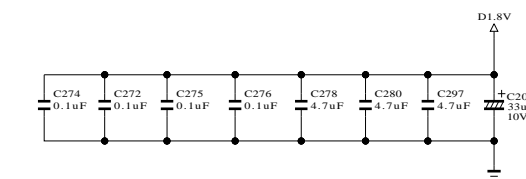
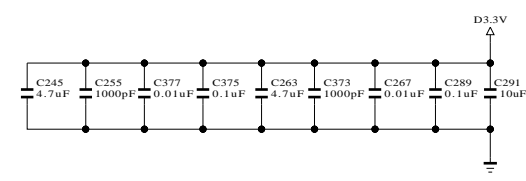
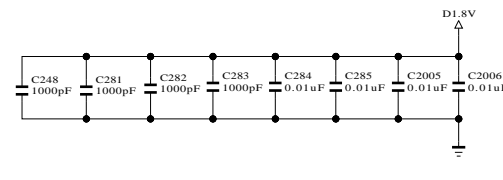
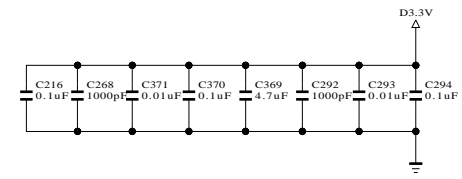
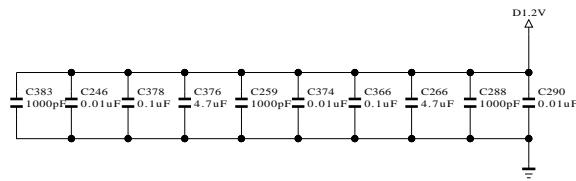
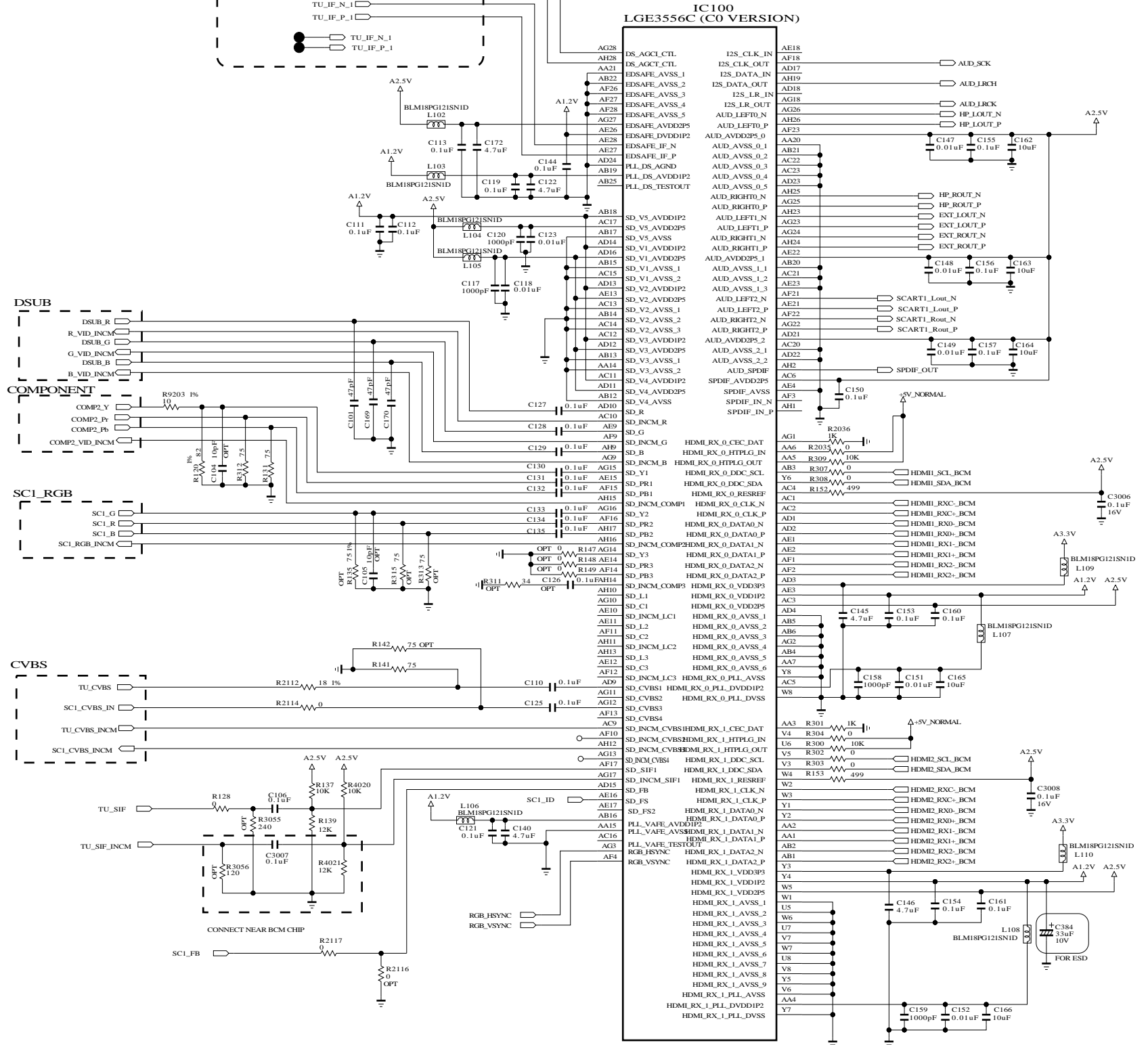
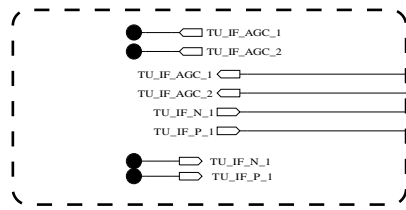
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LGElectronics



LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	BCM3556 & AUD_IN/LVDS	SHEET	2 /


HALF NIM TUMER



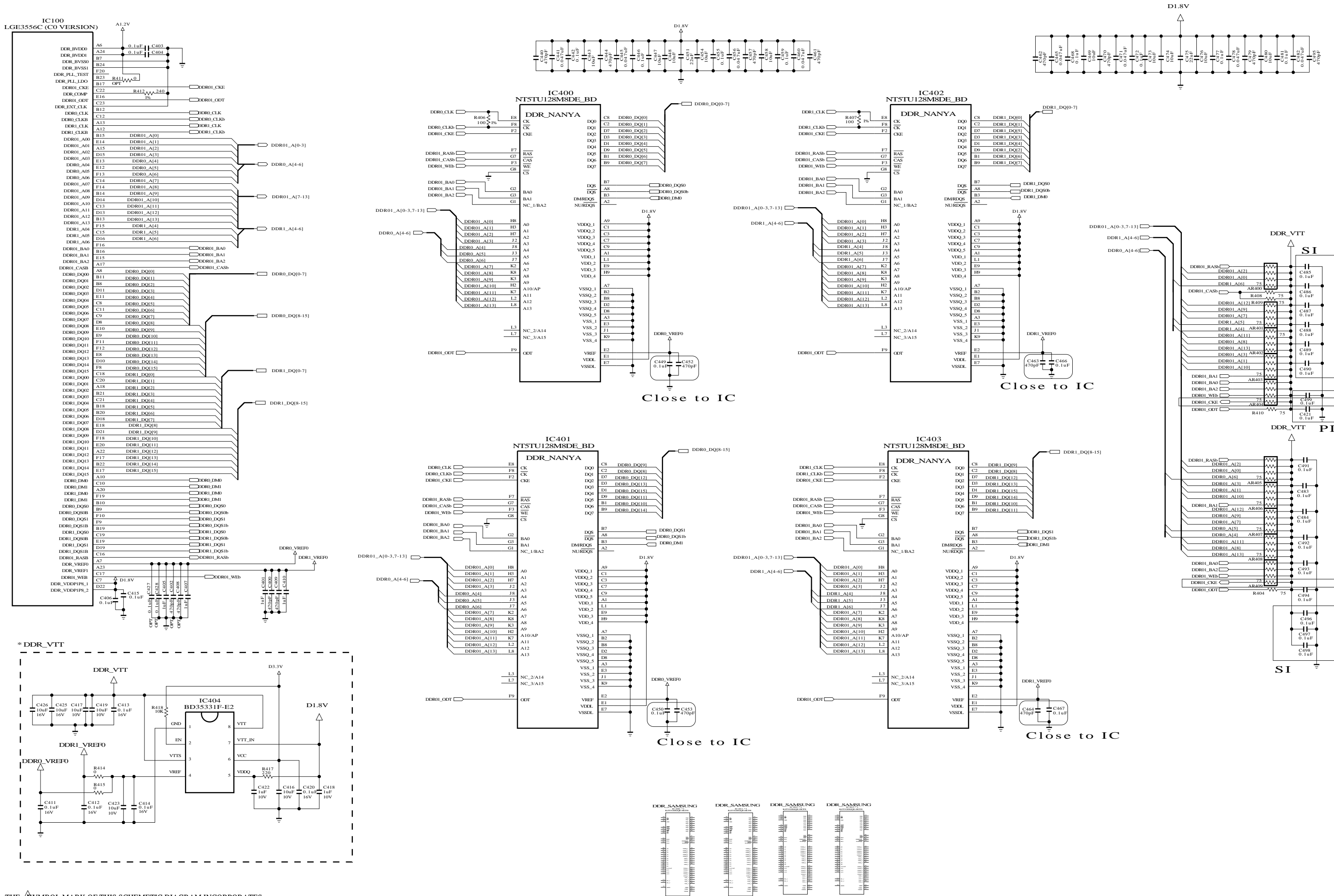
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

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 LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	BCM3556 & VIDEO	SHEET	3 /



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SECRET
LGElectronics

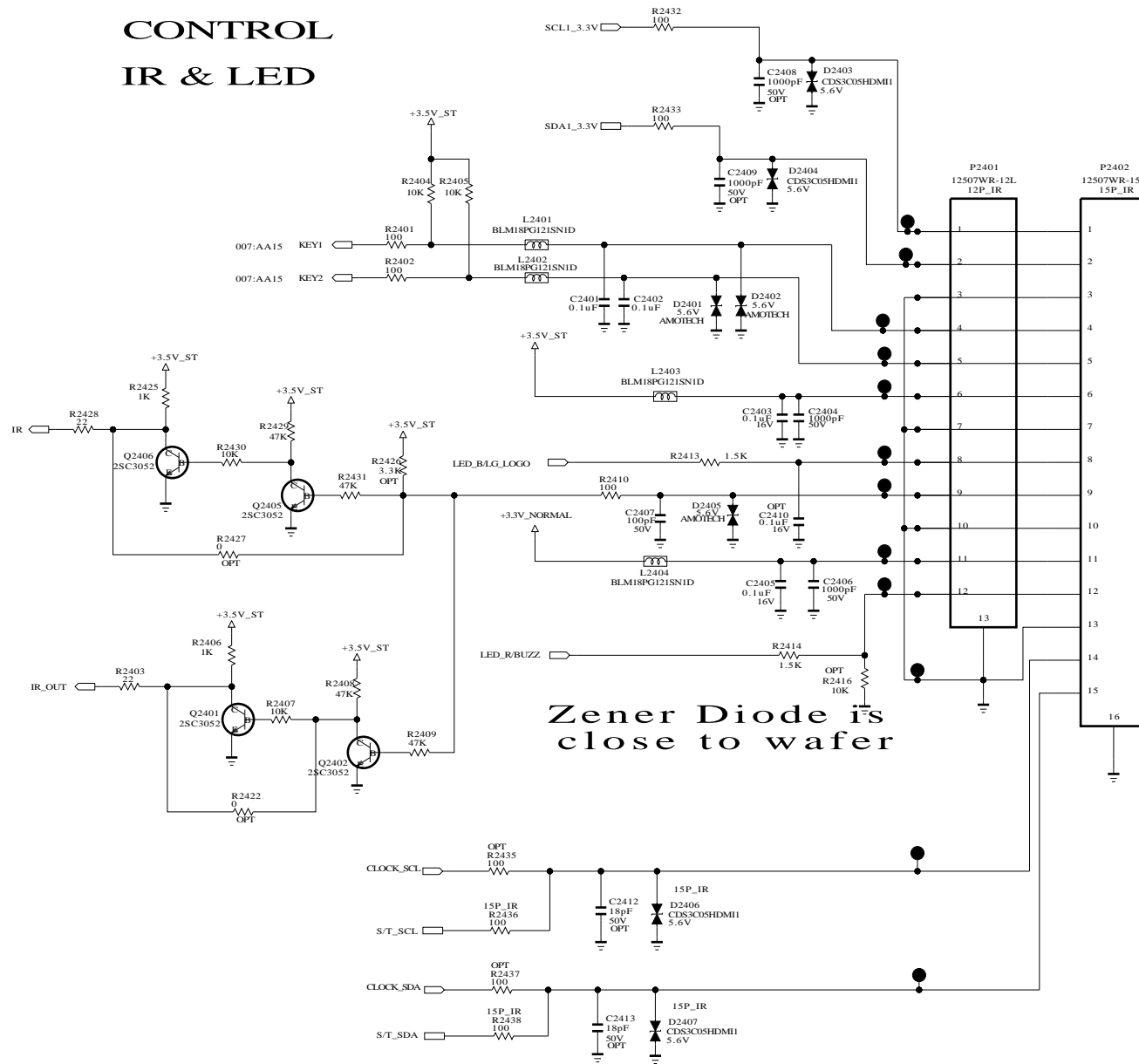
HONG YEON HYUK

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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	DDR Memory	SHEET	4

CONTROL IR & LED



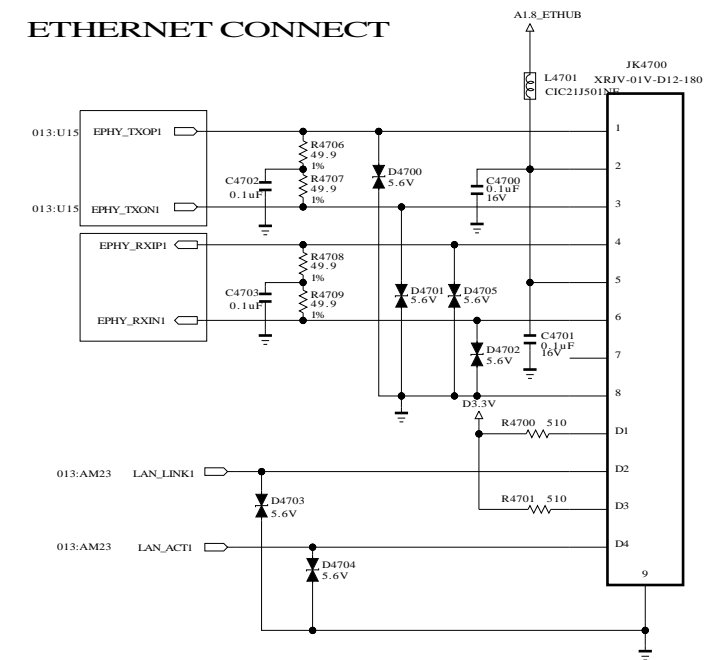
Zener Diode is
close to wafer

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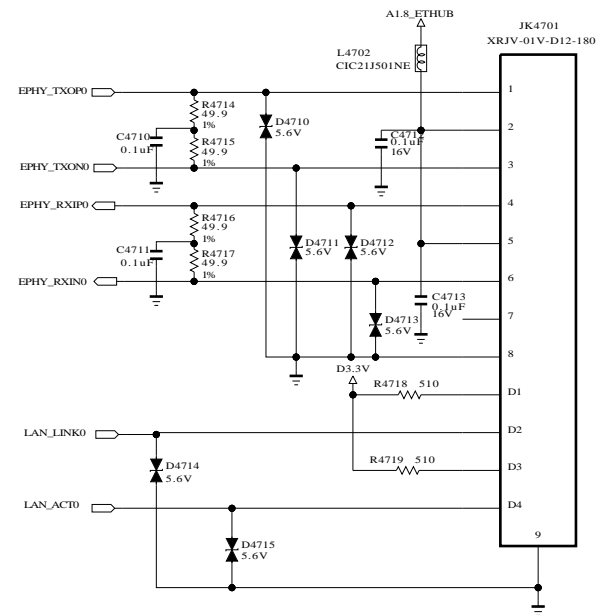
SECRET
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ETHERNET CONNECT

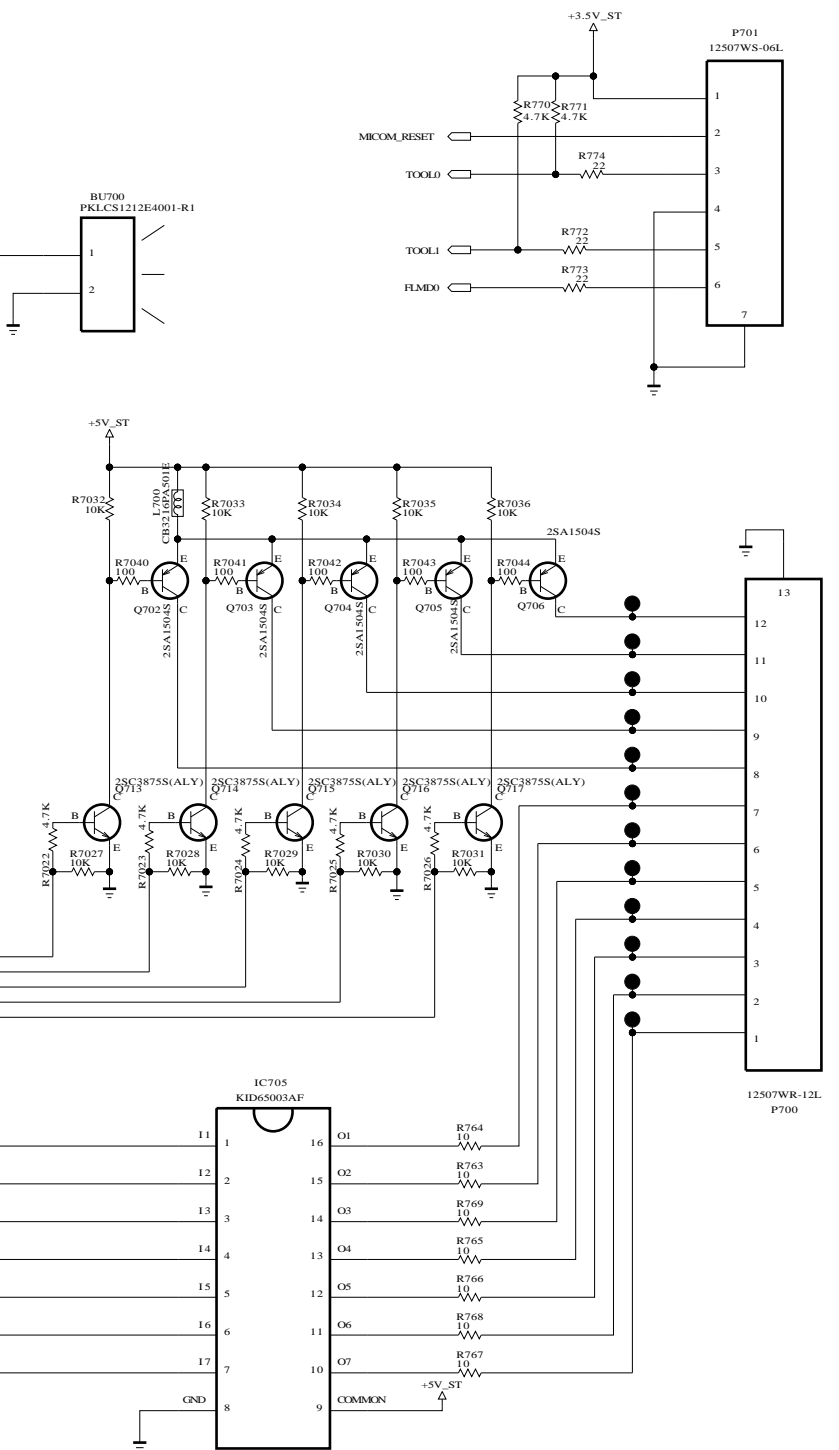
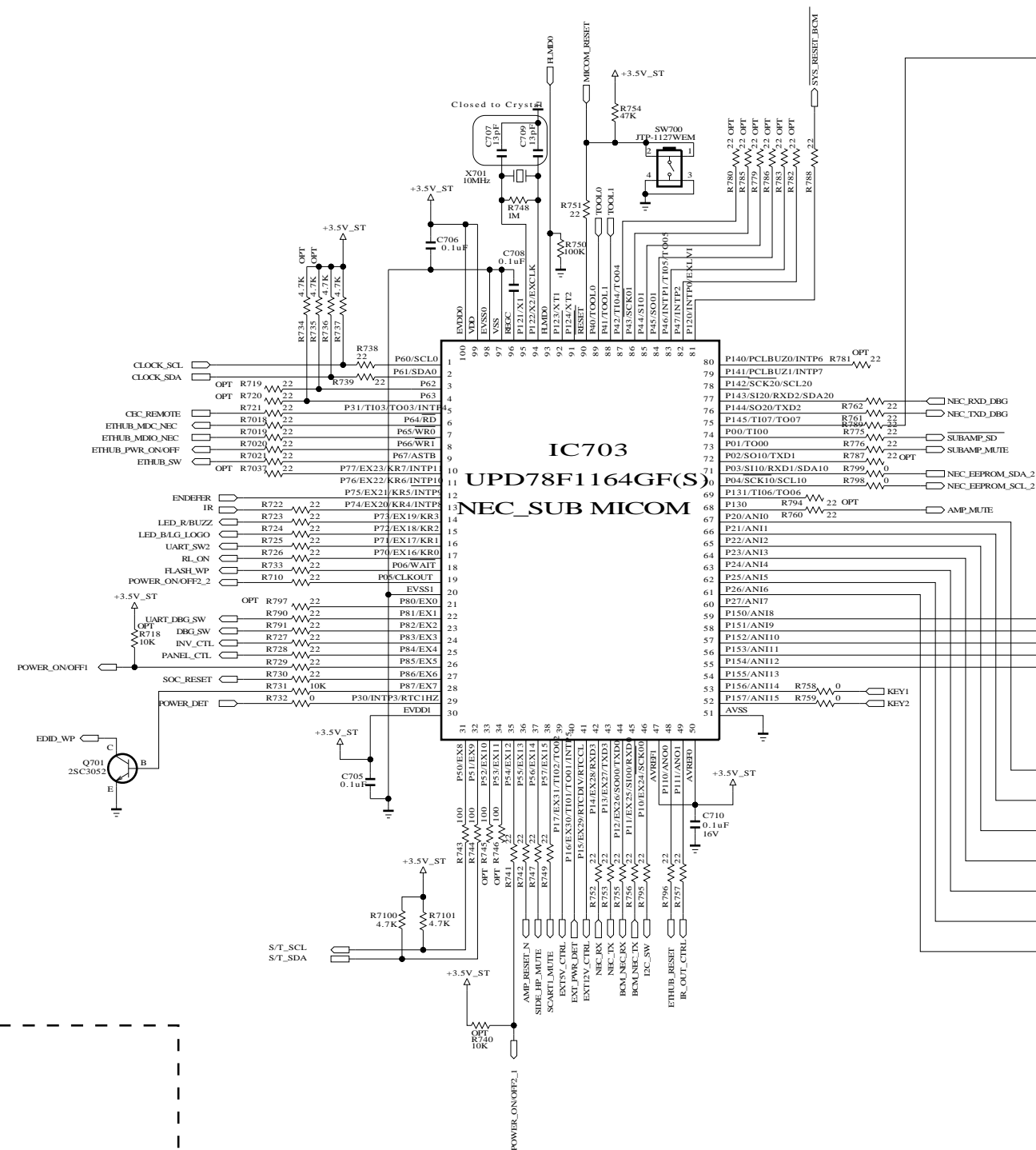
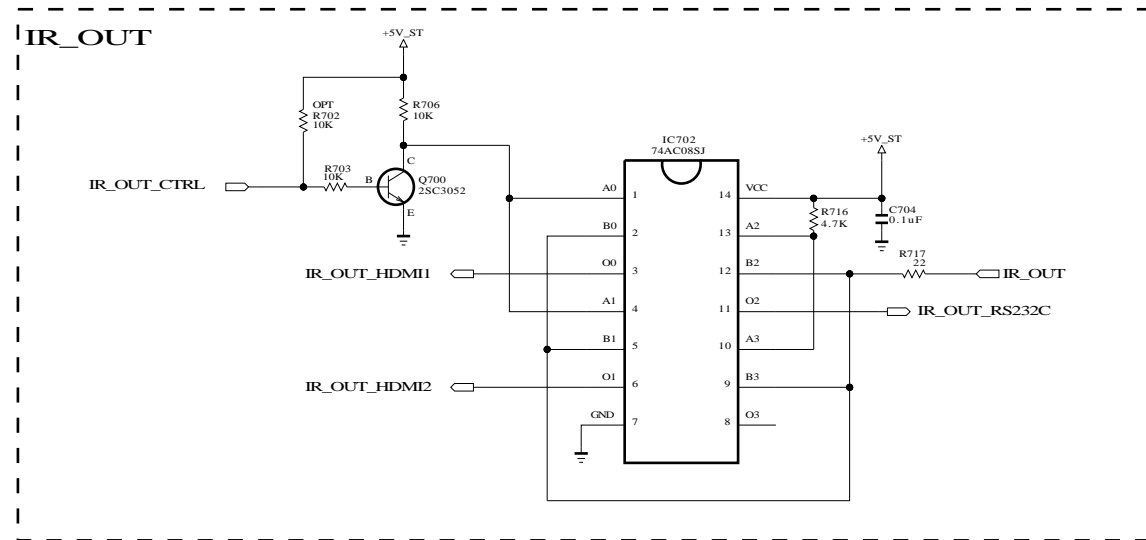


Trace impedance : 100 ohm differential impedance to GND plane
5 mils trace width with 7 mils air gap on P/N pair.
Adjacent TX/RX differential pairs should be separated by more than
15 mils to each other



Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	IR/Ethernet	SHEET	6 /

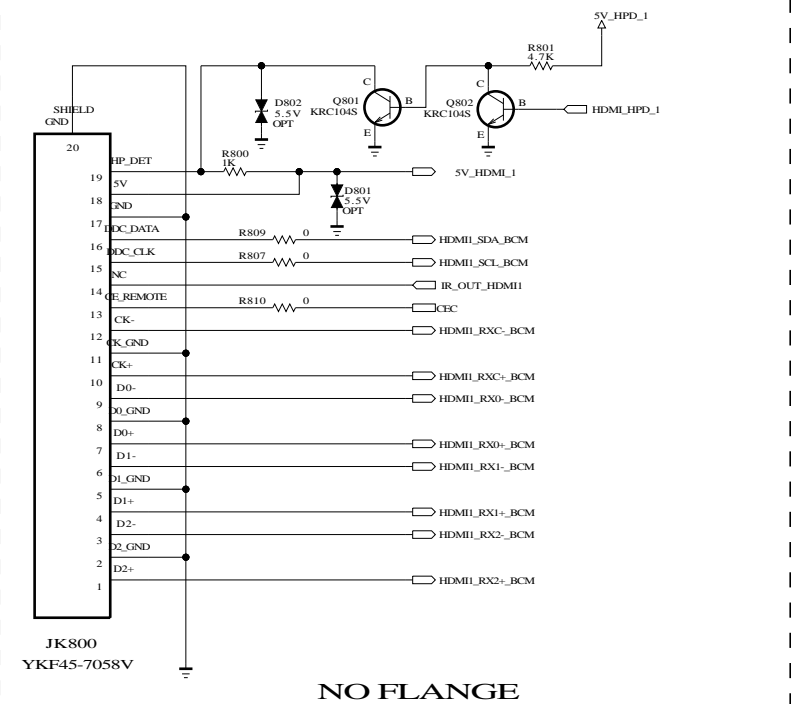


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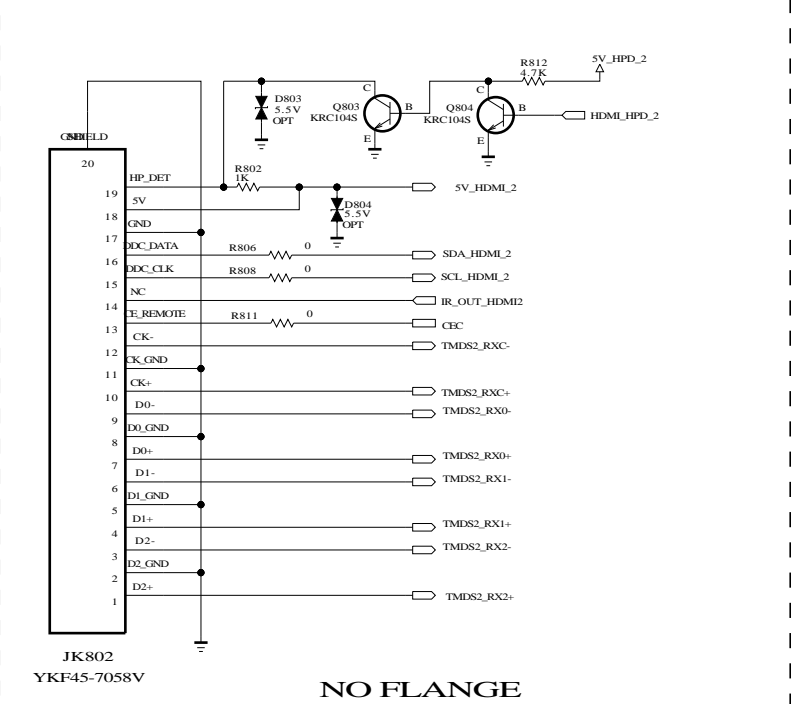
Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	NEC MICOM	SHEET	5 /

MECHANICAL : HDMI1

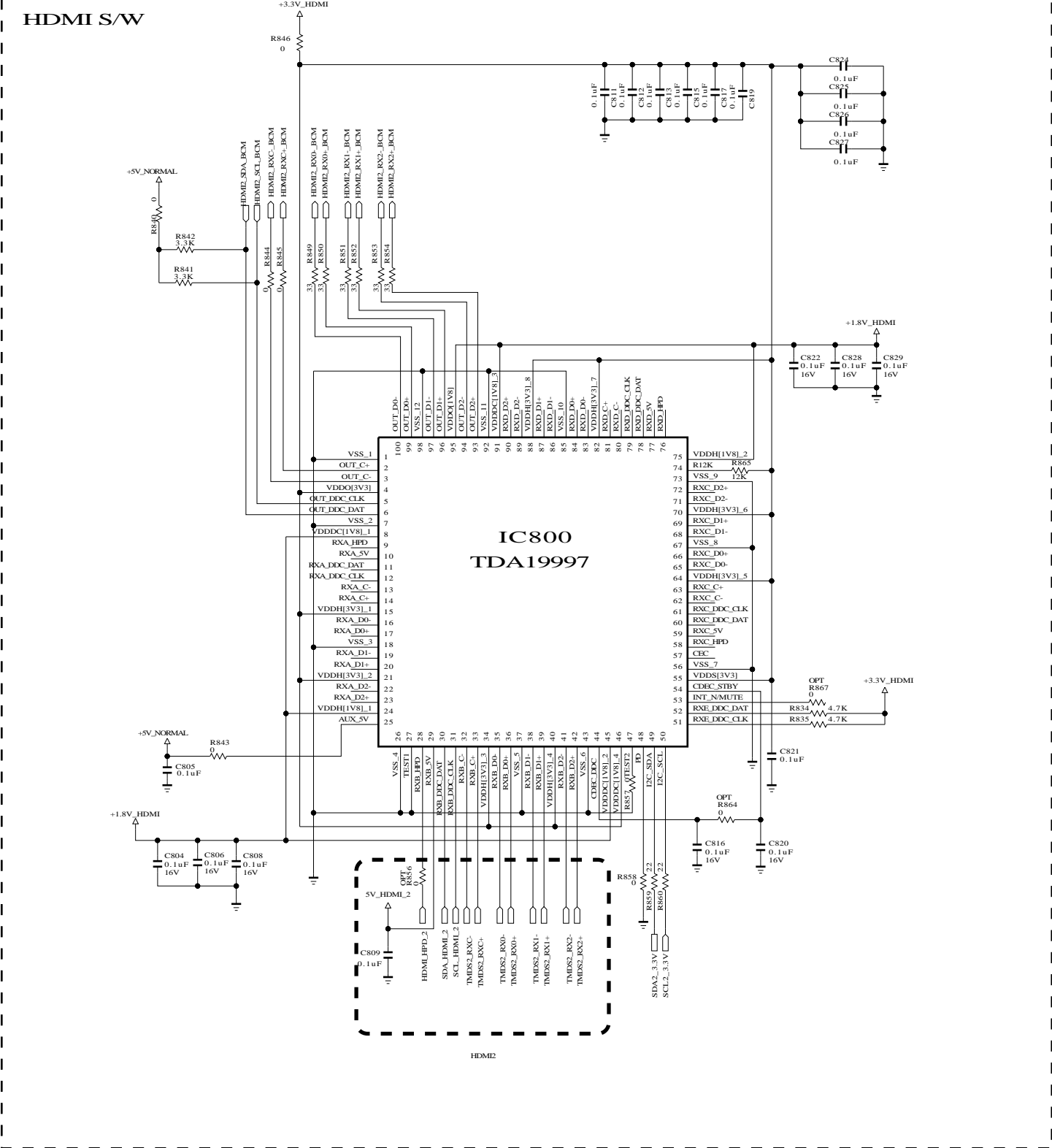
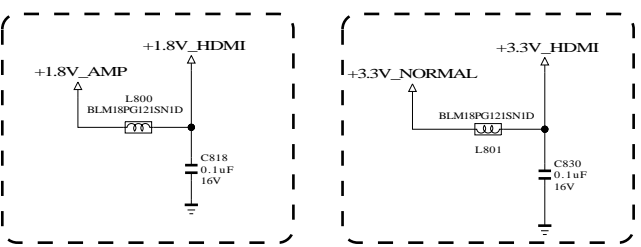
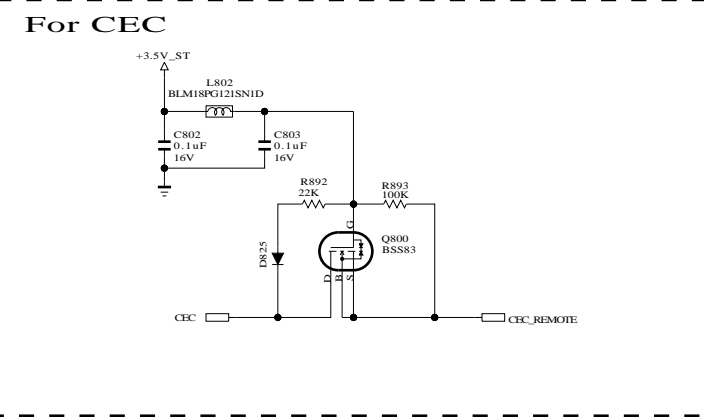
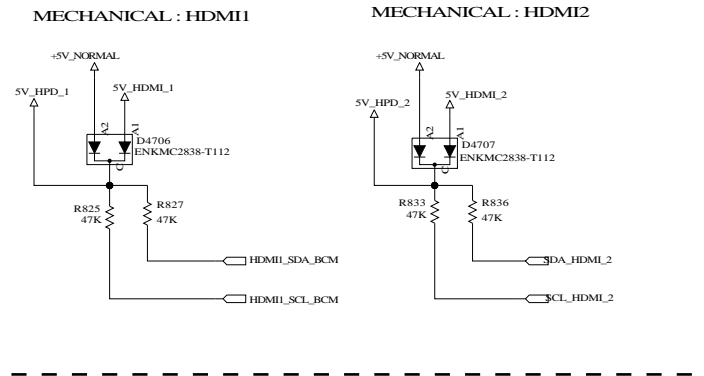


NO FLANGE

MECHANICAL : HDMI2



NO FLANGE



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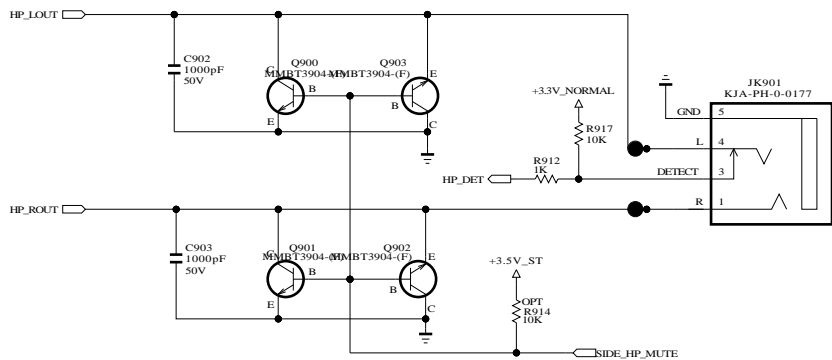
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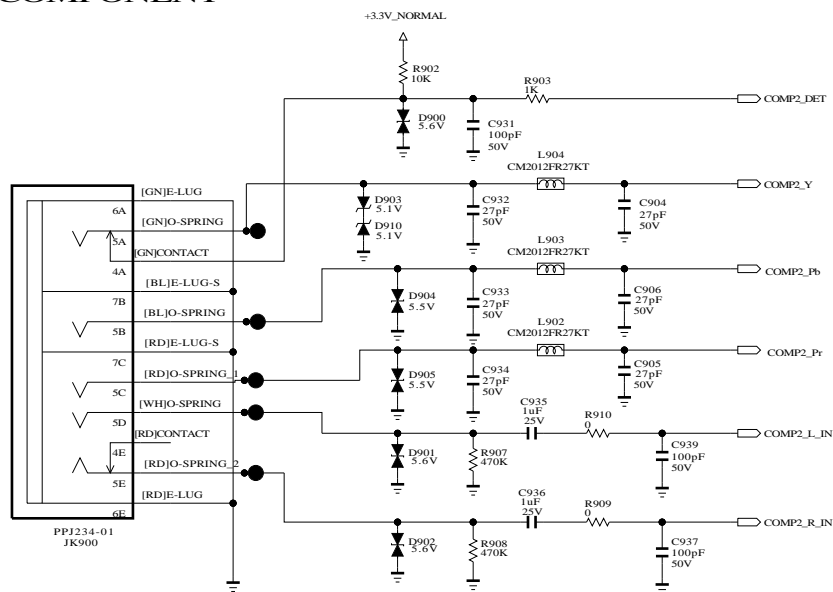
Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	HDMI	SHEET	8 /

EARPHONE BLOCK

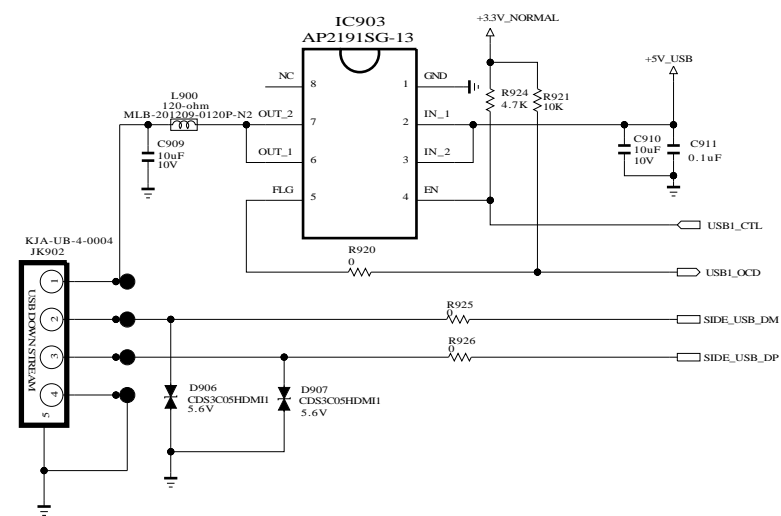
New Item Development



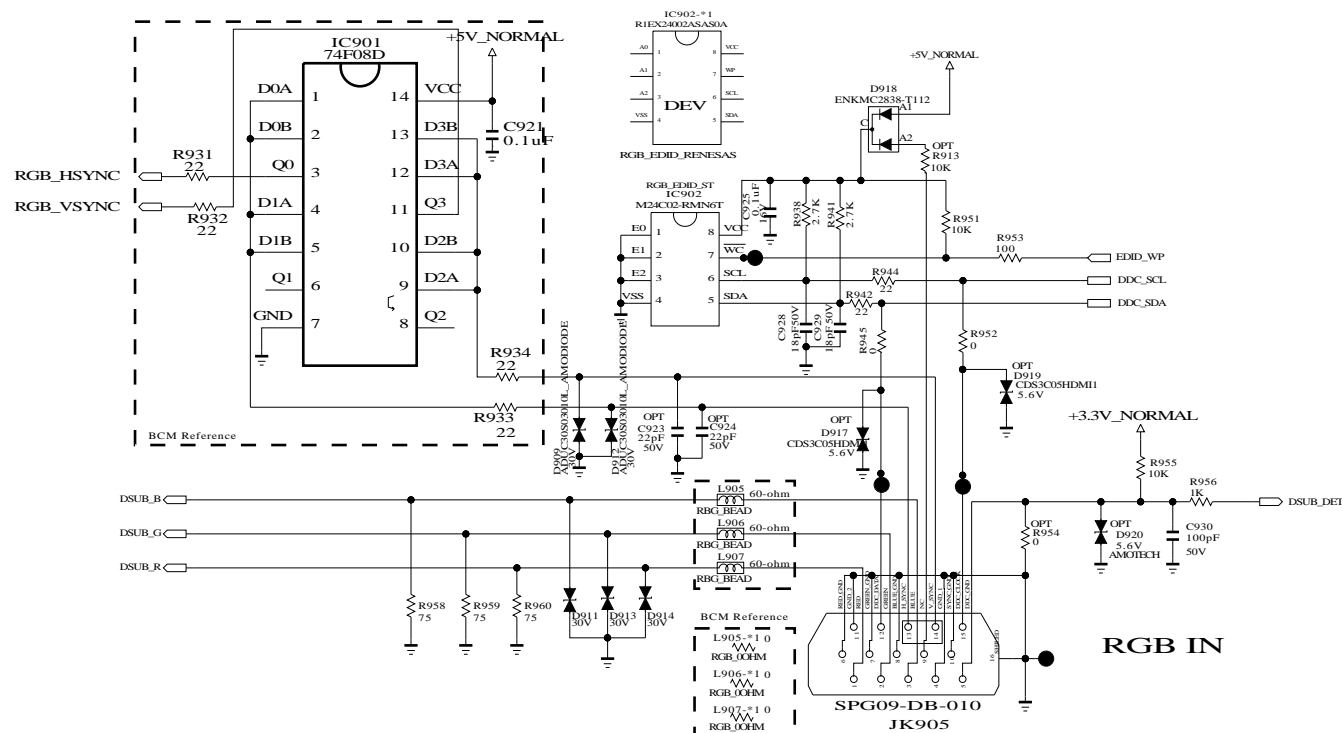
COMPONENT



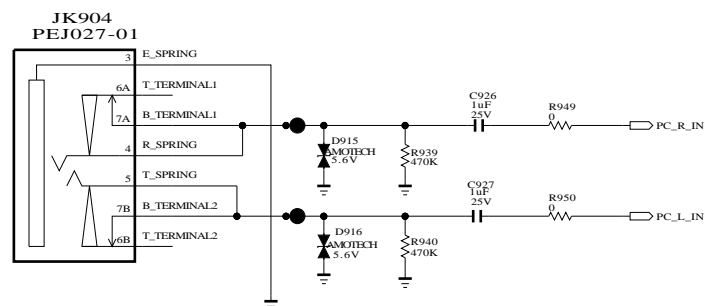
USB / DVR Ready



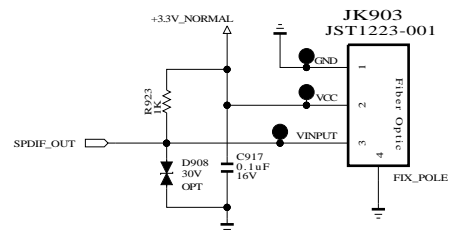
RGB PC



RGB AUDIO IN



SPDIF OPTIC JACK



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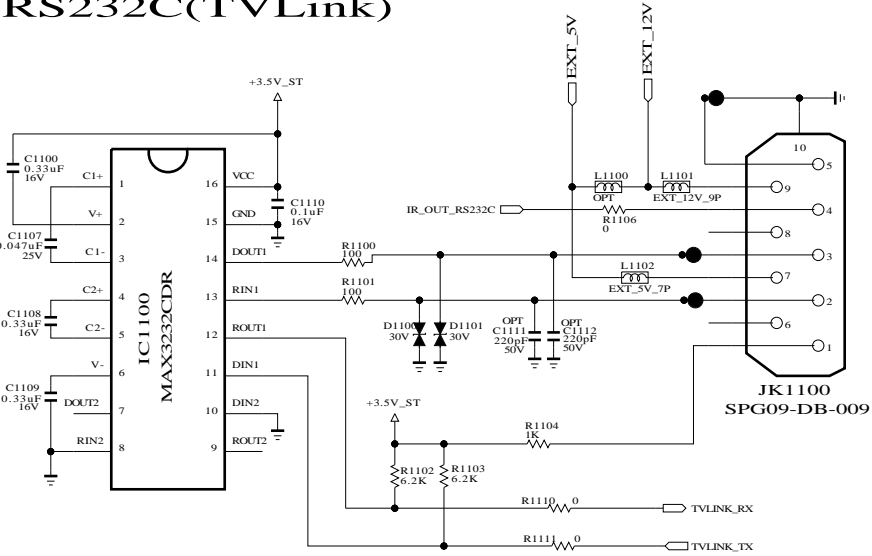
SECRET
LGElectronics

LG ELECTRONICS

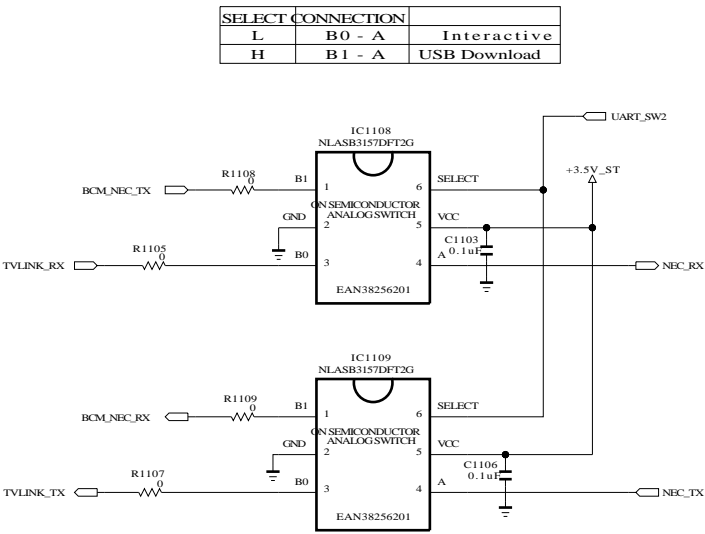
Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	AV Interface	SHEET	9 /

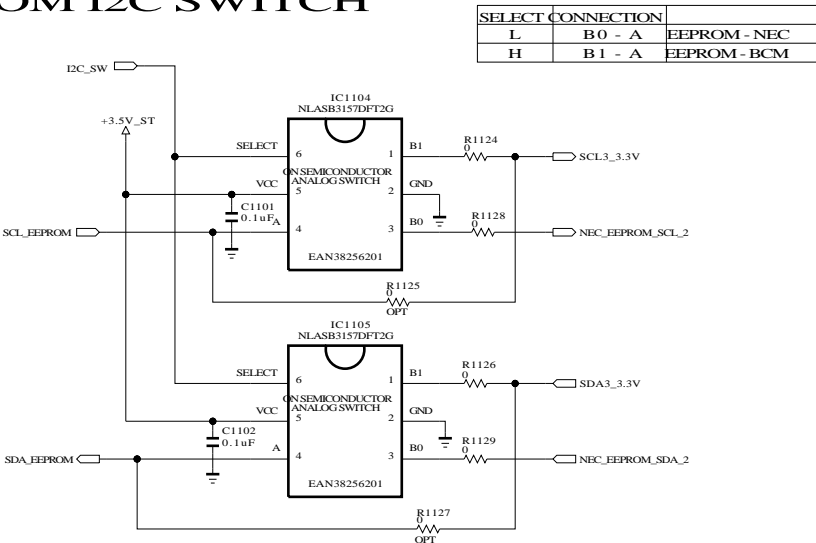
RS232C(TVLink)



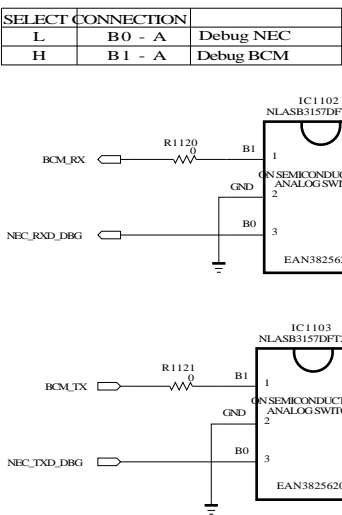
EXT UART SWITCH



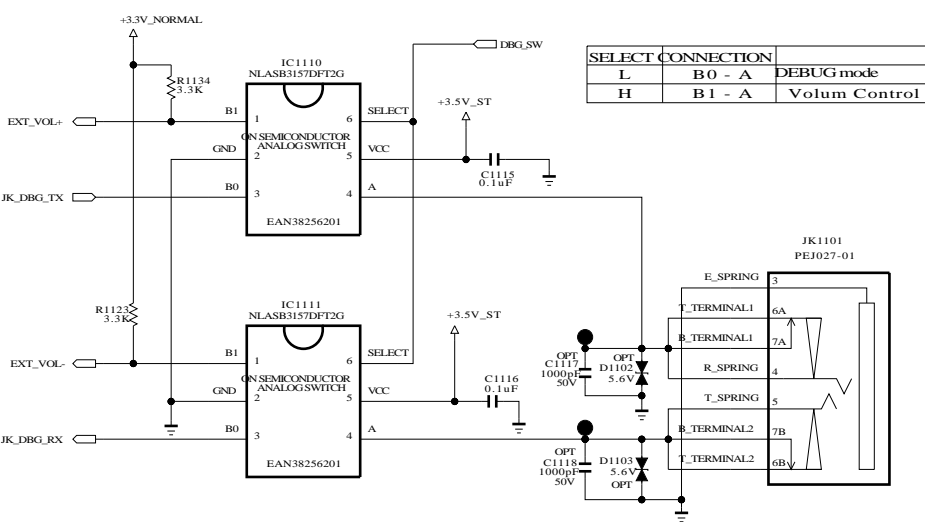
EEPROM I2C SWITCH



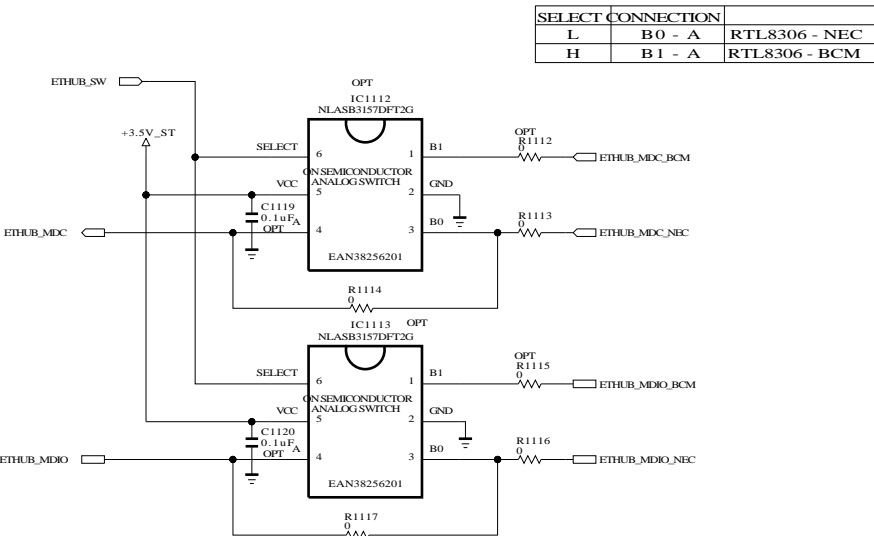
UART DBG SWITCH



EXT_SPK_CONTROL & DBG OUT



Ethernet_HUB EEPROM Switch

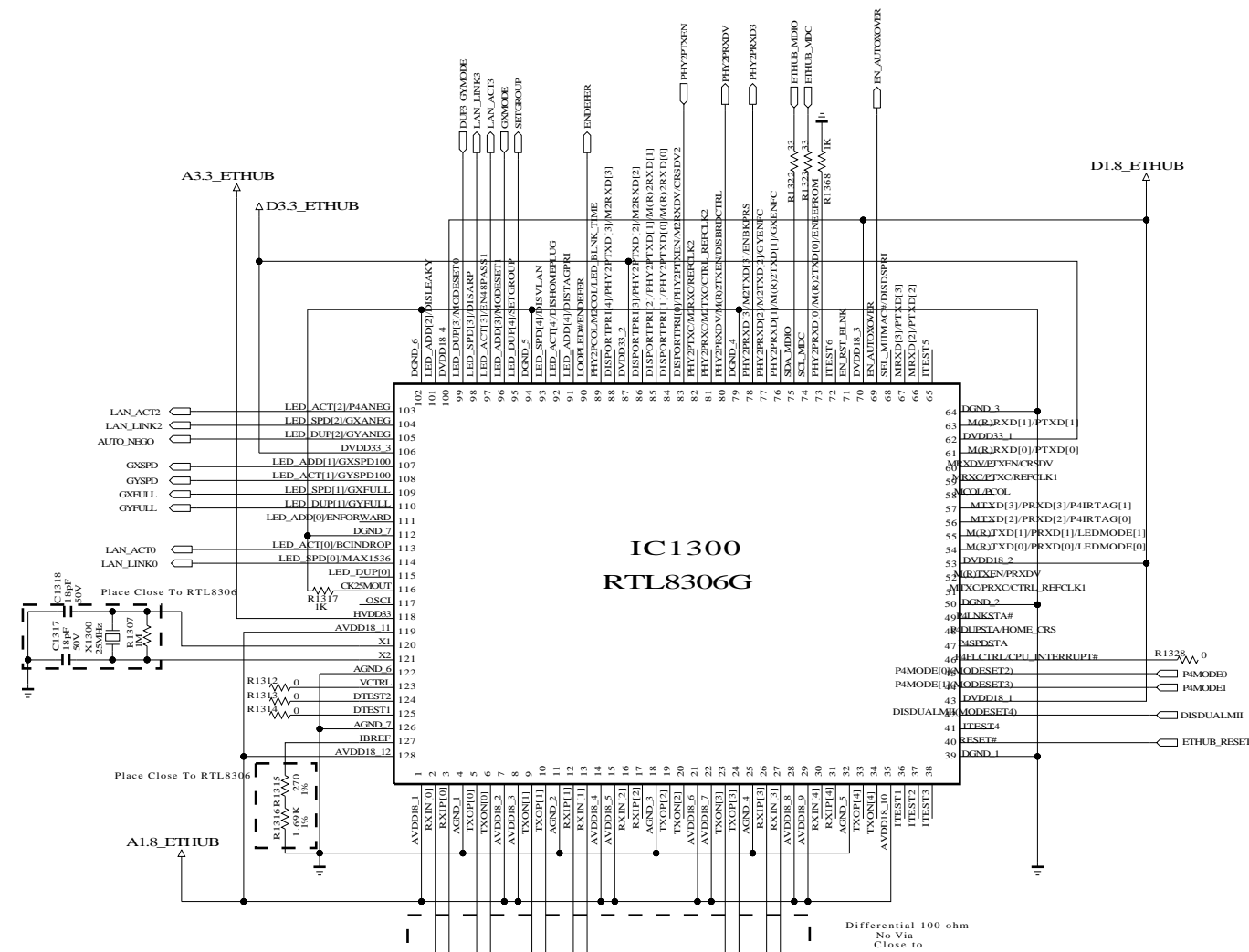
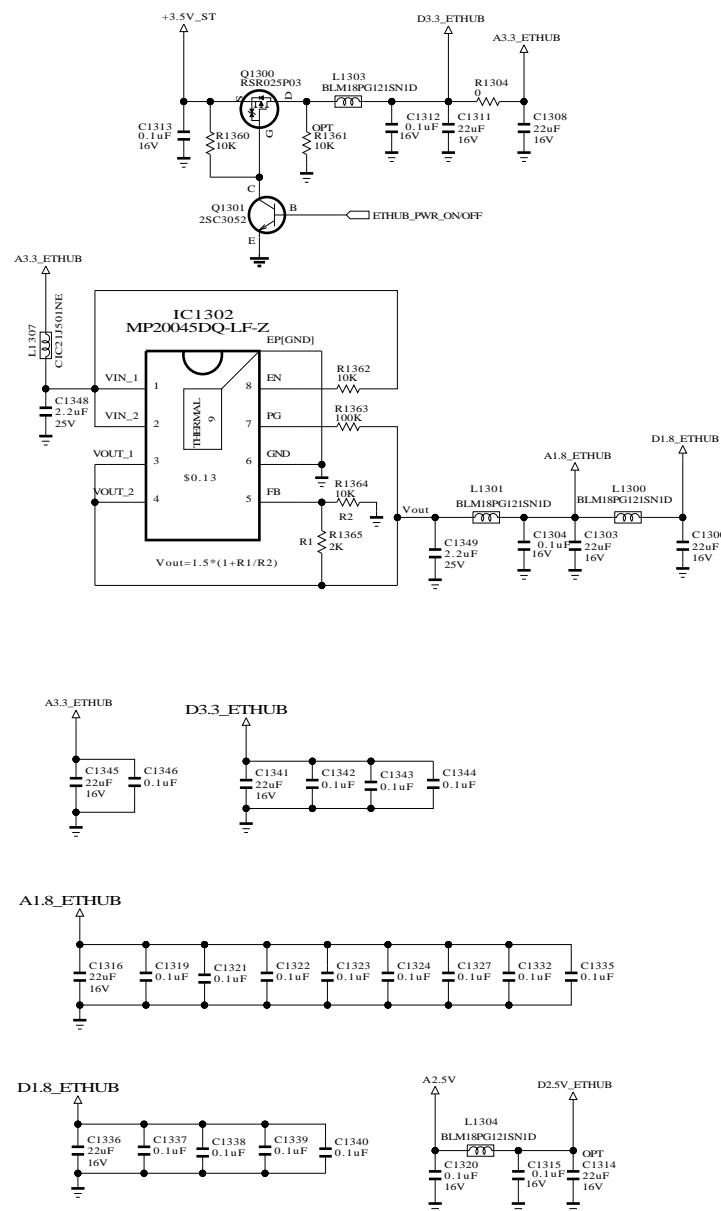


THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

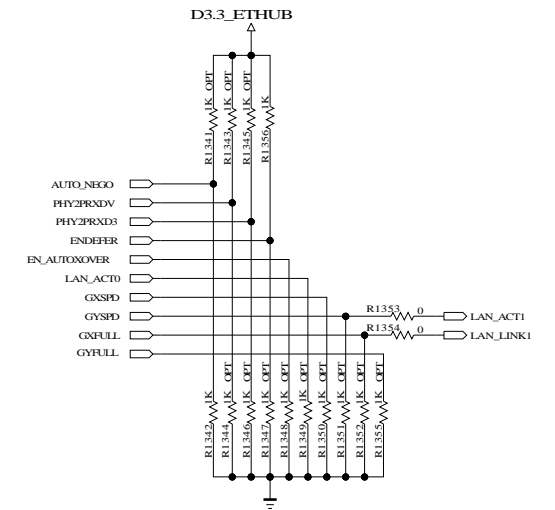
SECRET
LGElectronics



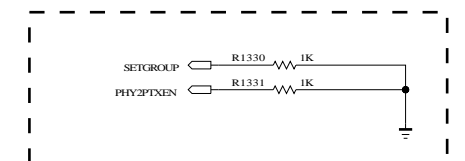
Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	UART&Switch	SHEET	11 /



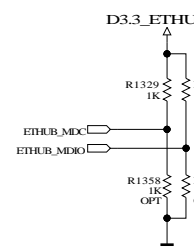
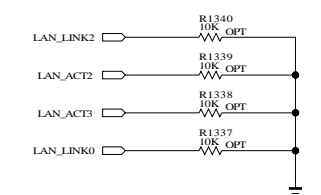
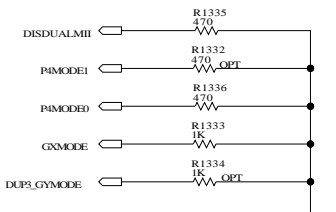
STRAPPING PIN CONFIG



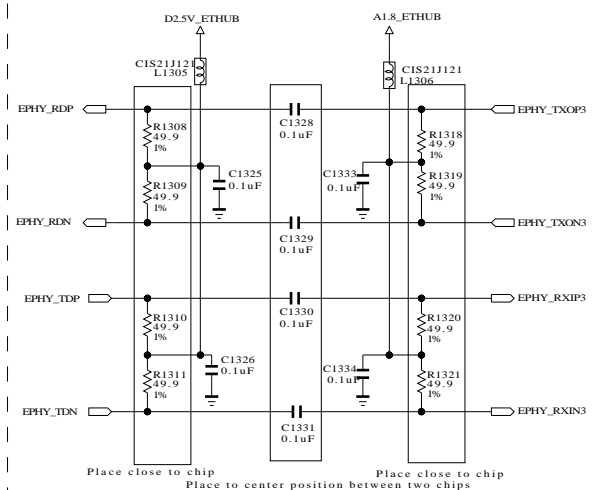
PHY2PRXDV : Broadcast strom control enable/disable
PHY2PRXD3 : Backpressure enable/disable
ENDEFER : Defer enable/disable
EN_AUTOXOVER : Auto cross over enable/disable



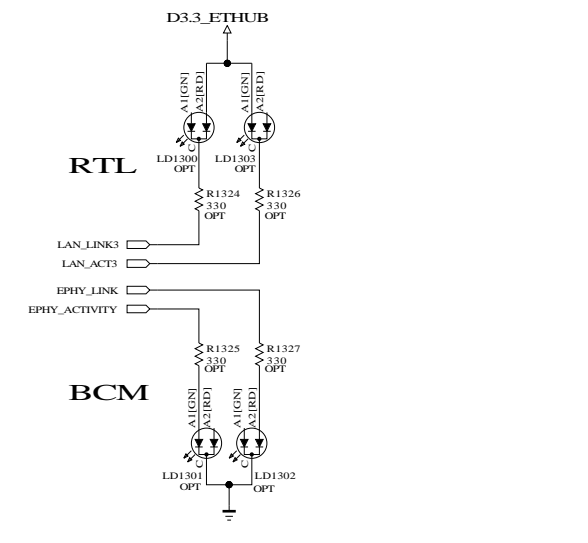
CONFIG FOR MAC5



BCM TO RTL matching



FOR DEBUG



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SECRET

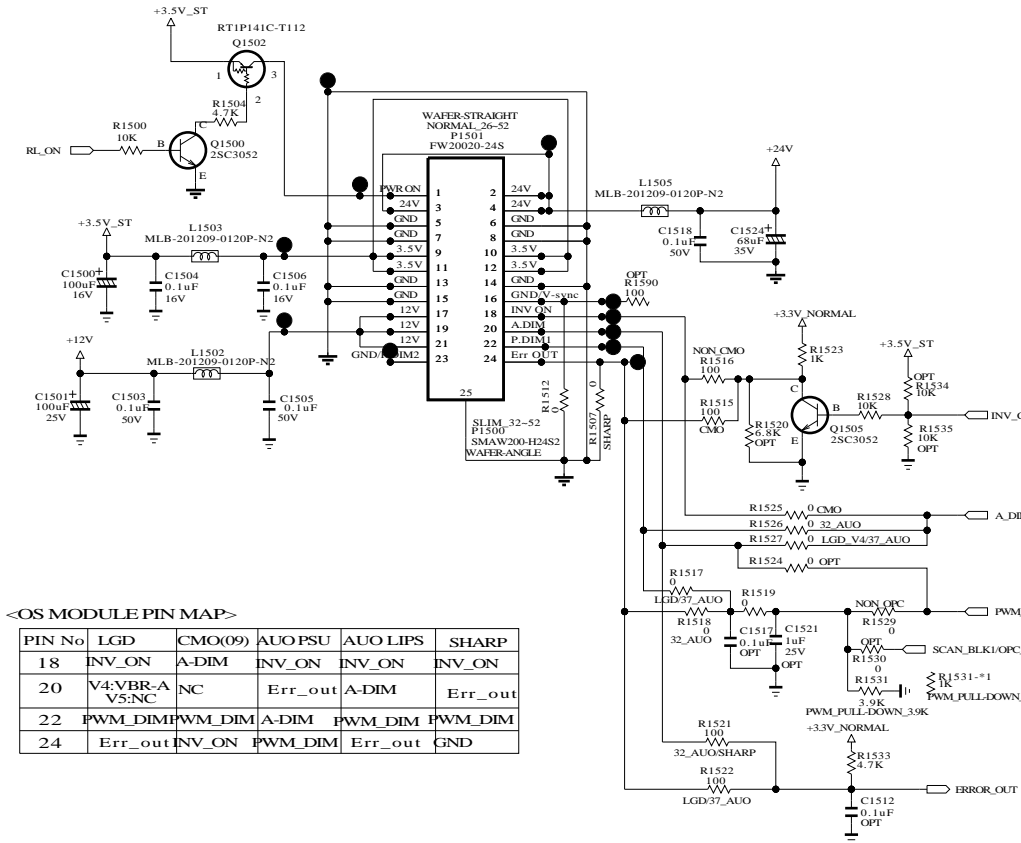
LGElectronics

LG ELECTRONICS

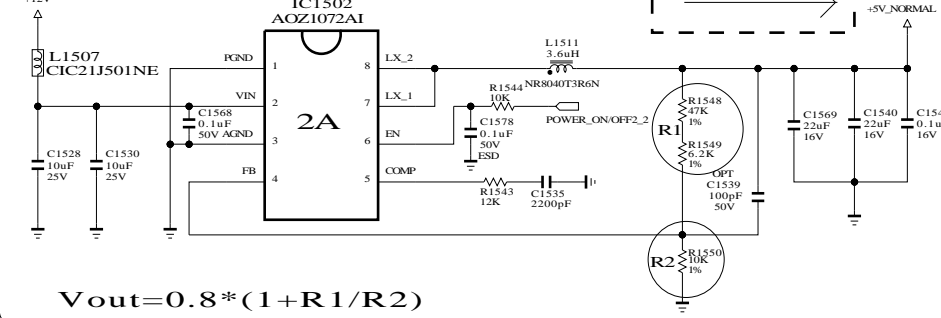
Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	ETHERNET HUB	SHEET	13 /

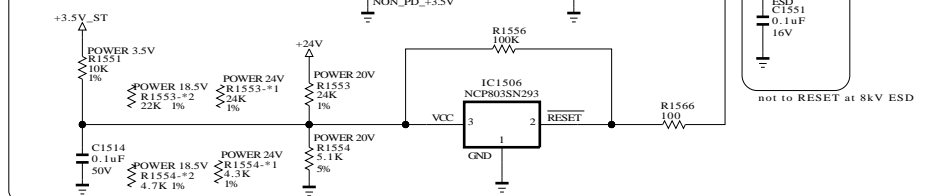
FROM LIPS & POWER B/D



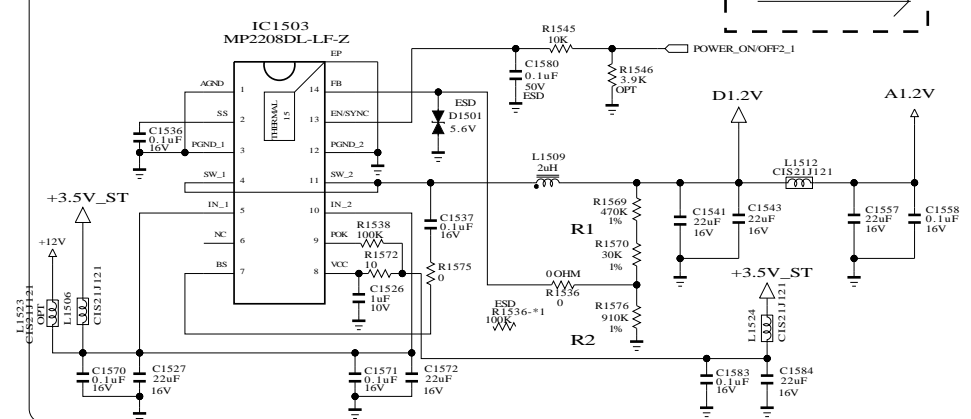
+5V_NORMAL



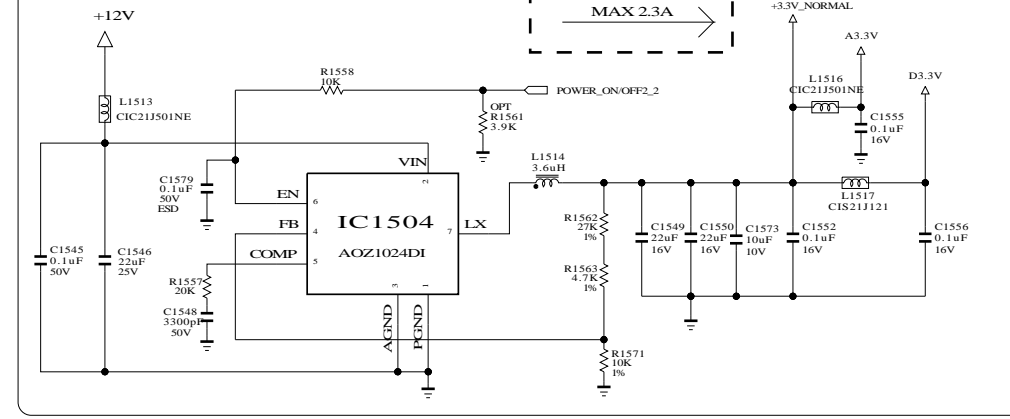
Power_DET



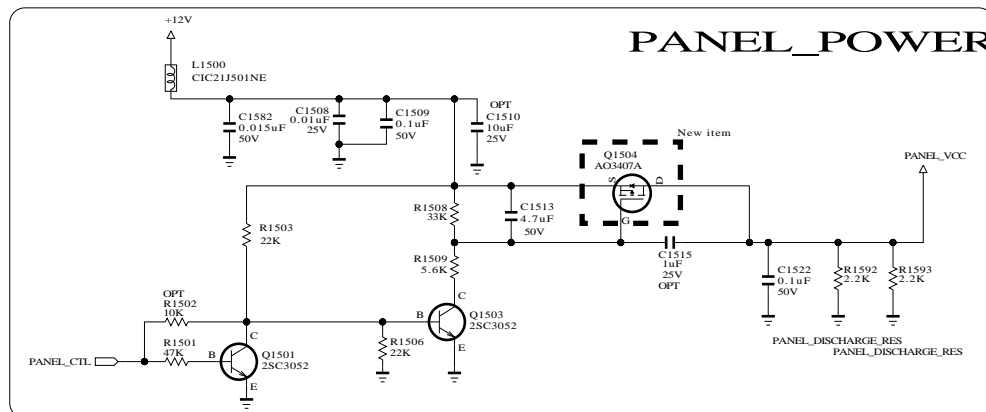
BCM core 1.26V volt



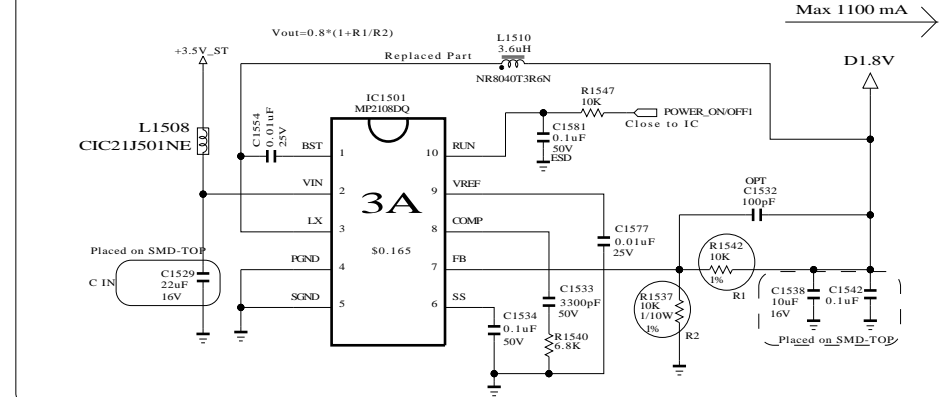
+3.3V_NORMAL



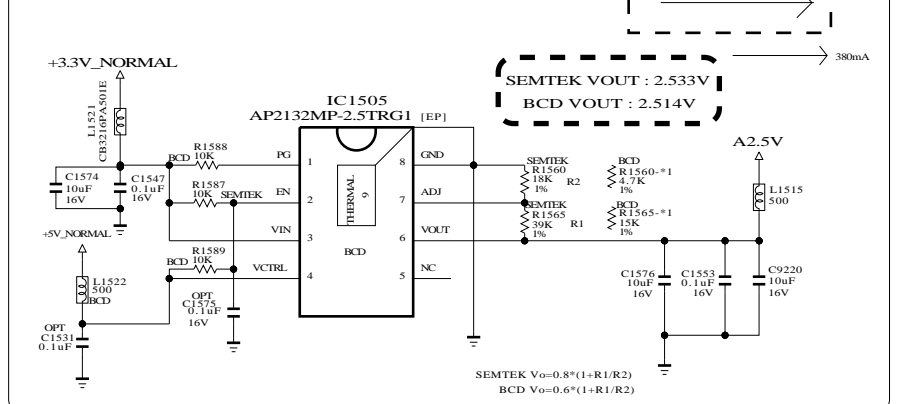
PANEL_POWER



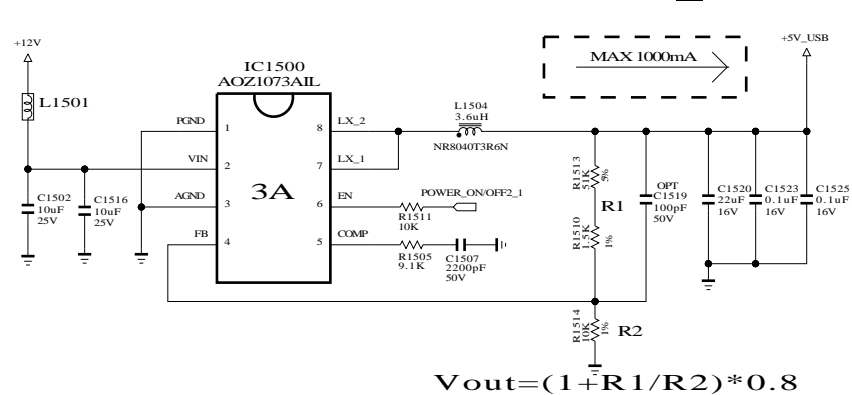
BCM DDR 1.8V



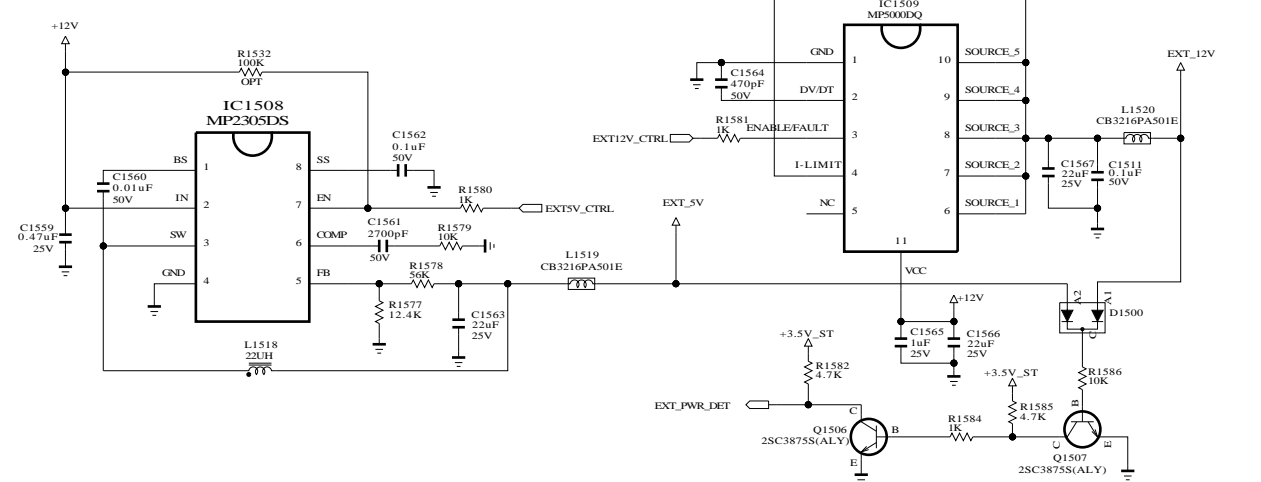
BCM A2.5V



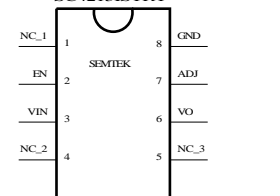
+5V_USB



5V/12V EXT PowerOut



IC1505-*1 SC42151STRT



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SECRET

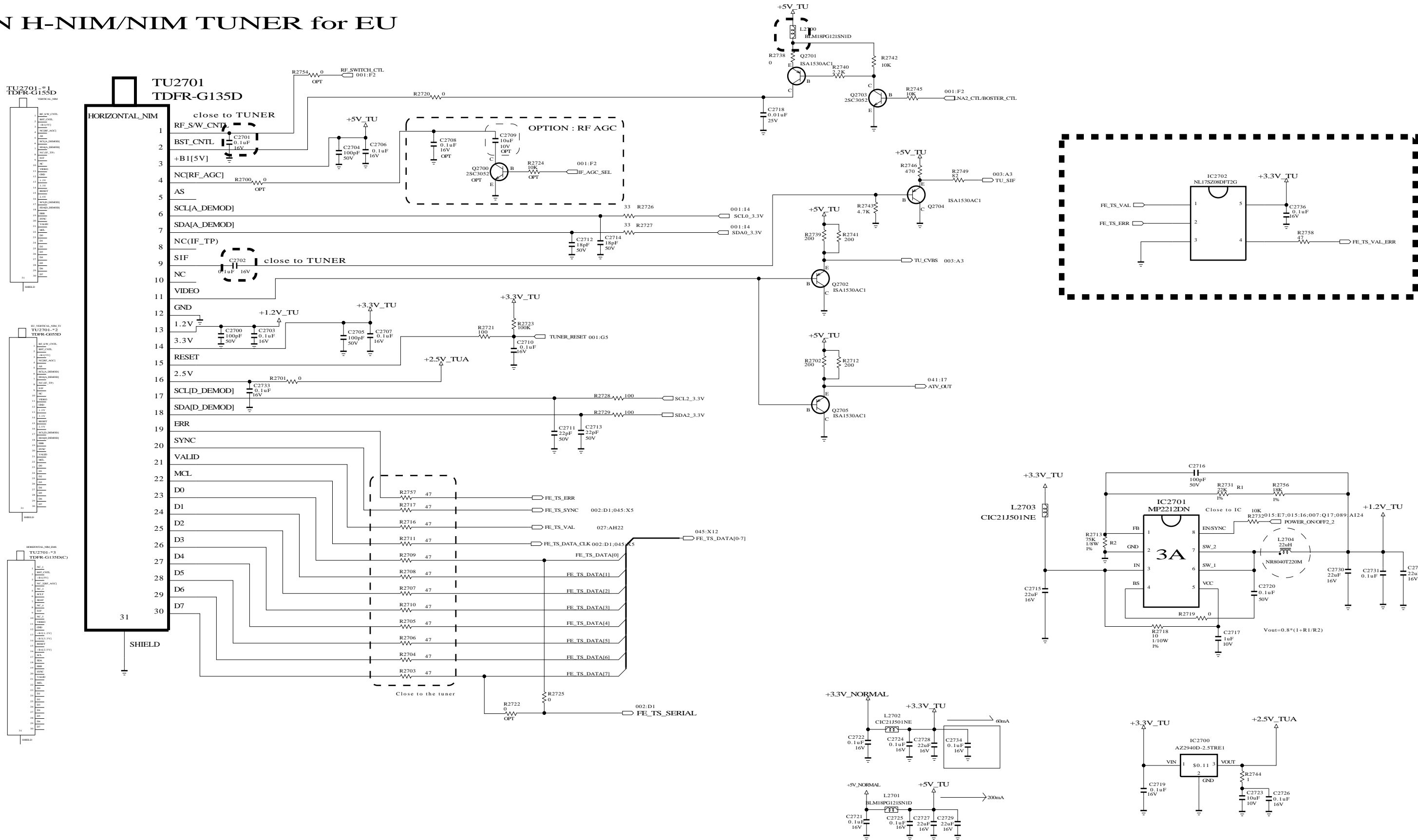
LGElectronics



LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	POWER	SHEET	15 /

CAN H-NIM/NIM TUNER for EU



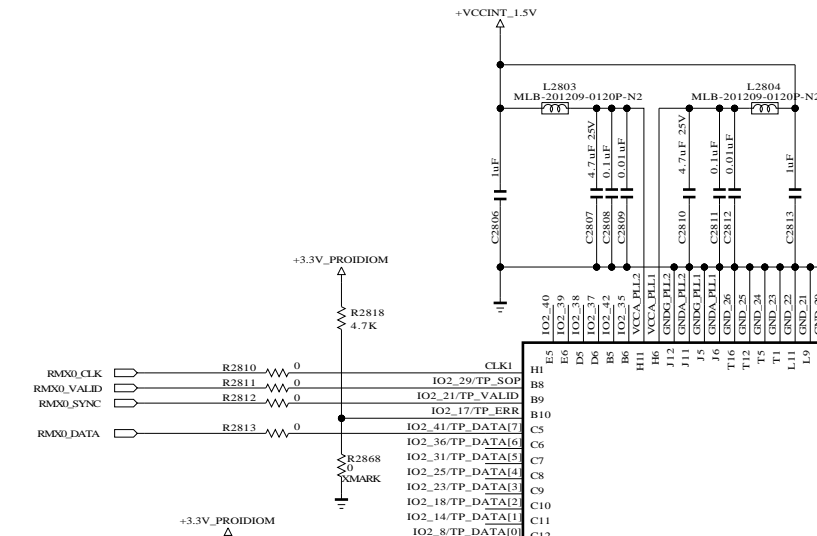
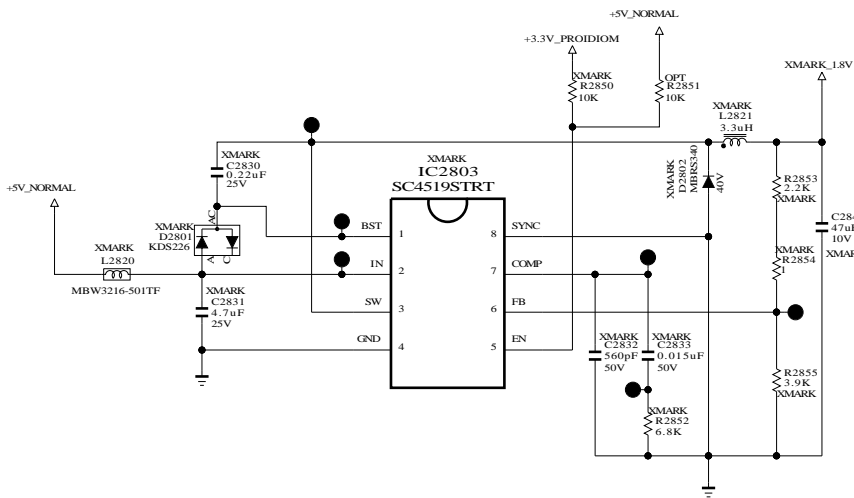
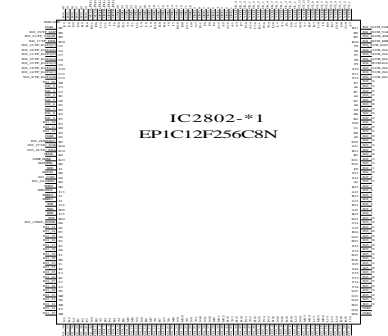
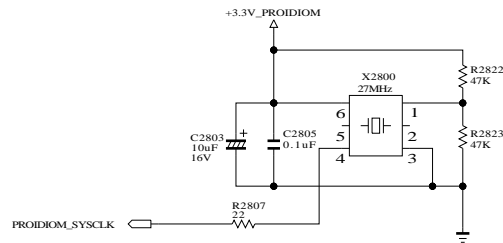
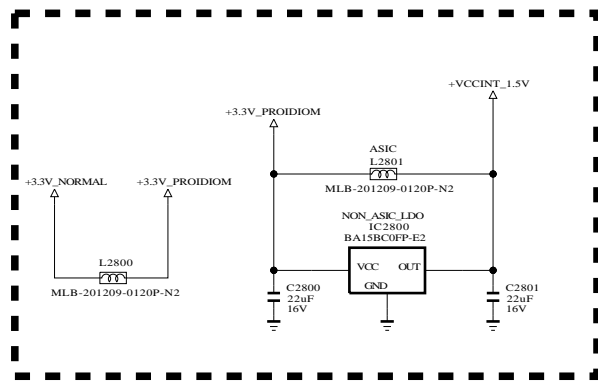
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SECRET

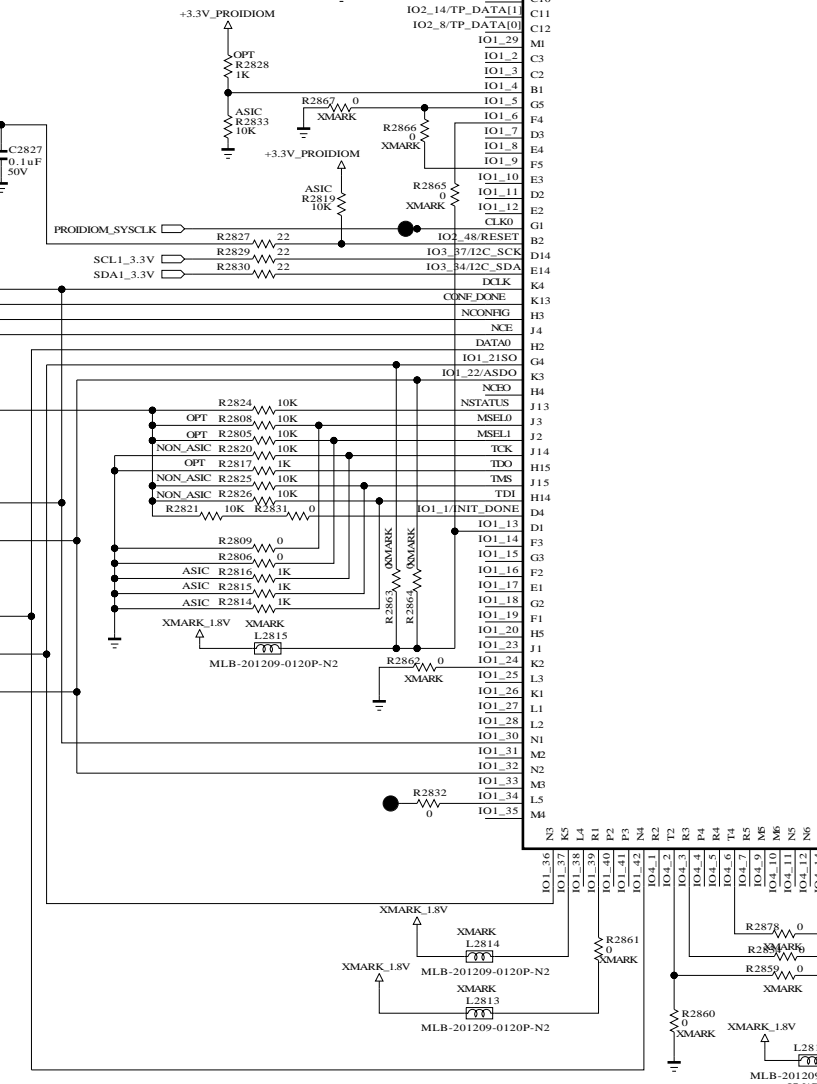
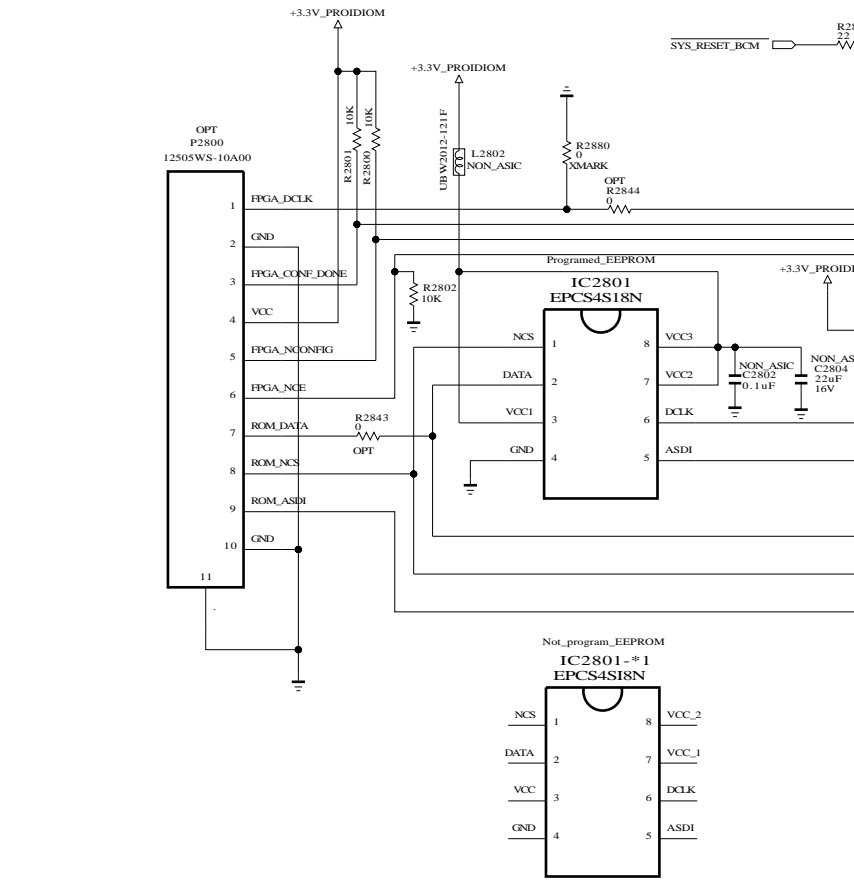
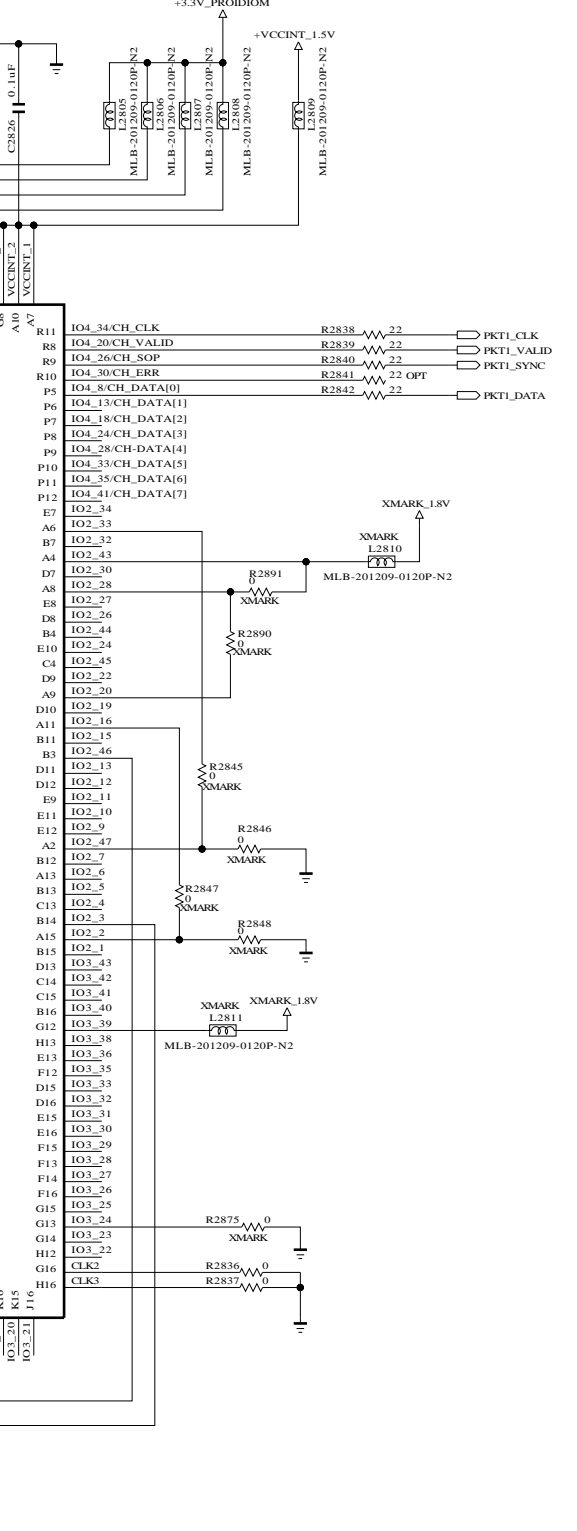
LGElectronics

 LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	TUNER	SHEET	27 /



IC2802
LGDT1129
ASIC
I2C : 0xF0



FPGA Program I/F

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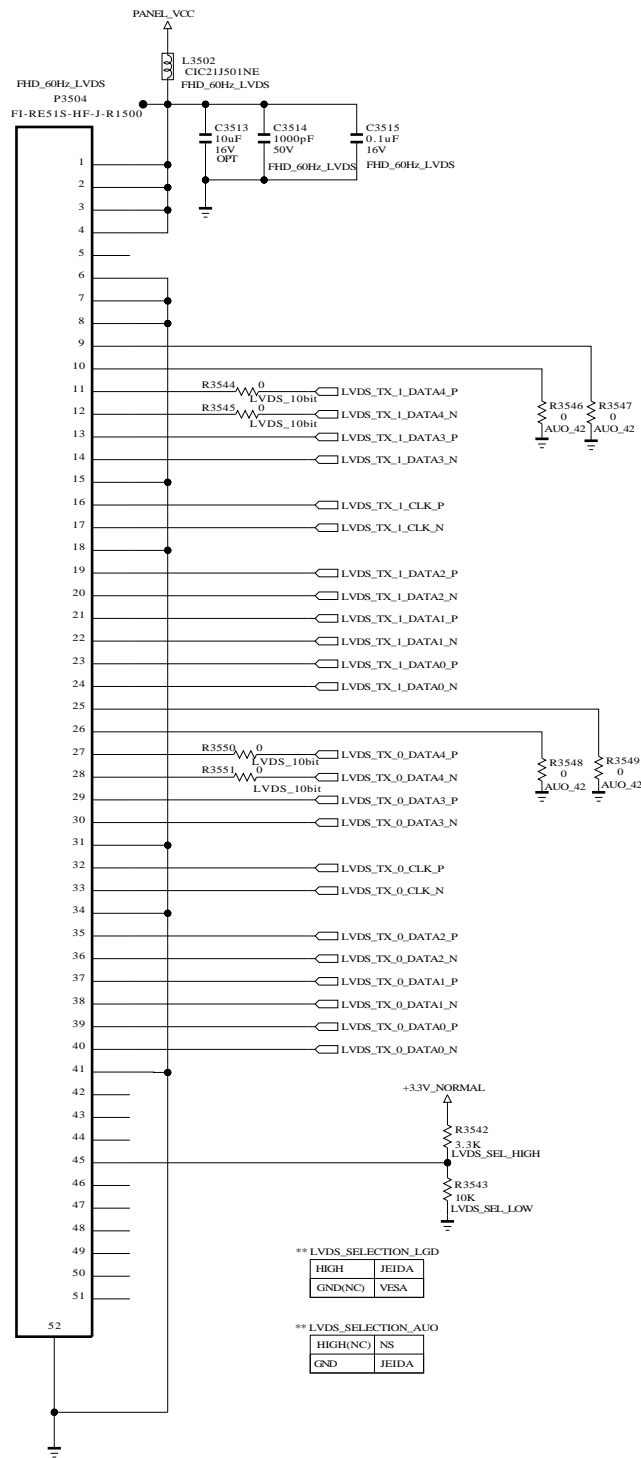
SECRET
LGElectronics

LG ELECTRONICS

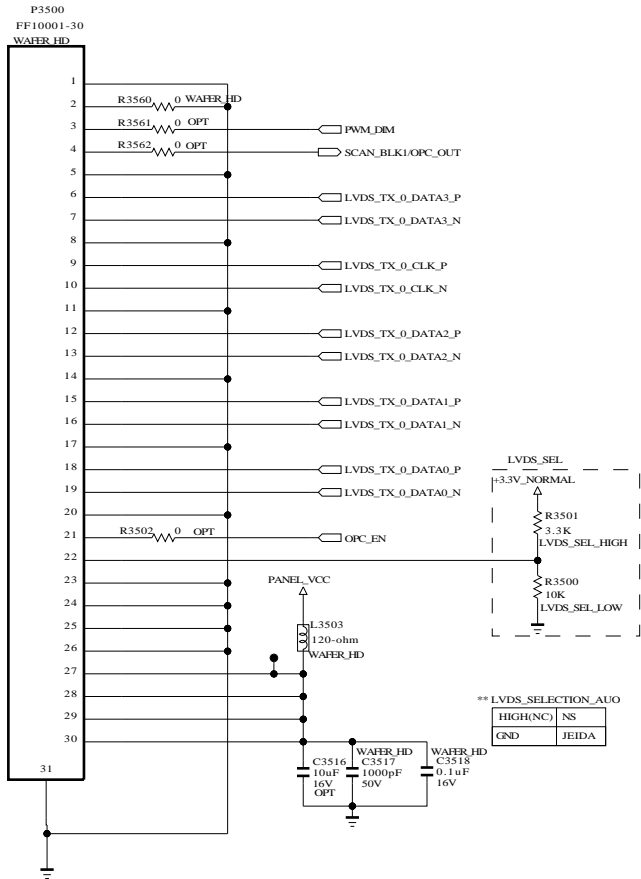
Chameleon(EU_GP2_BCM3556)			
MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	Pro:Idiom	SHEET	28 /

From BCM FHD

[51Pin LVDS Connector]
(For FHD 60/120Hz)



[30Pin LVDS Connector]
(For HD 60Hz_Normal)



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SECRET

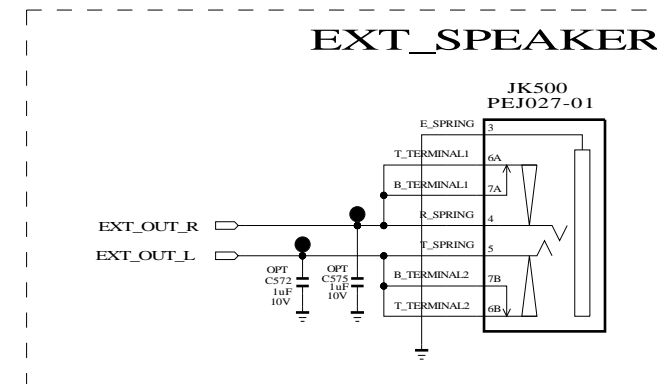
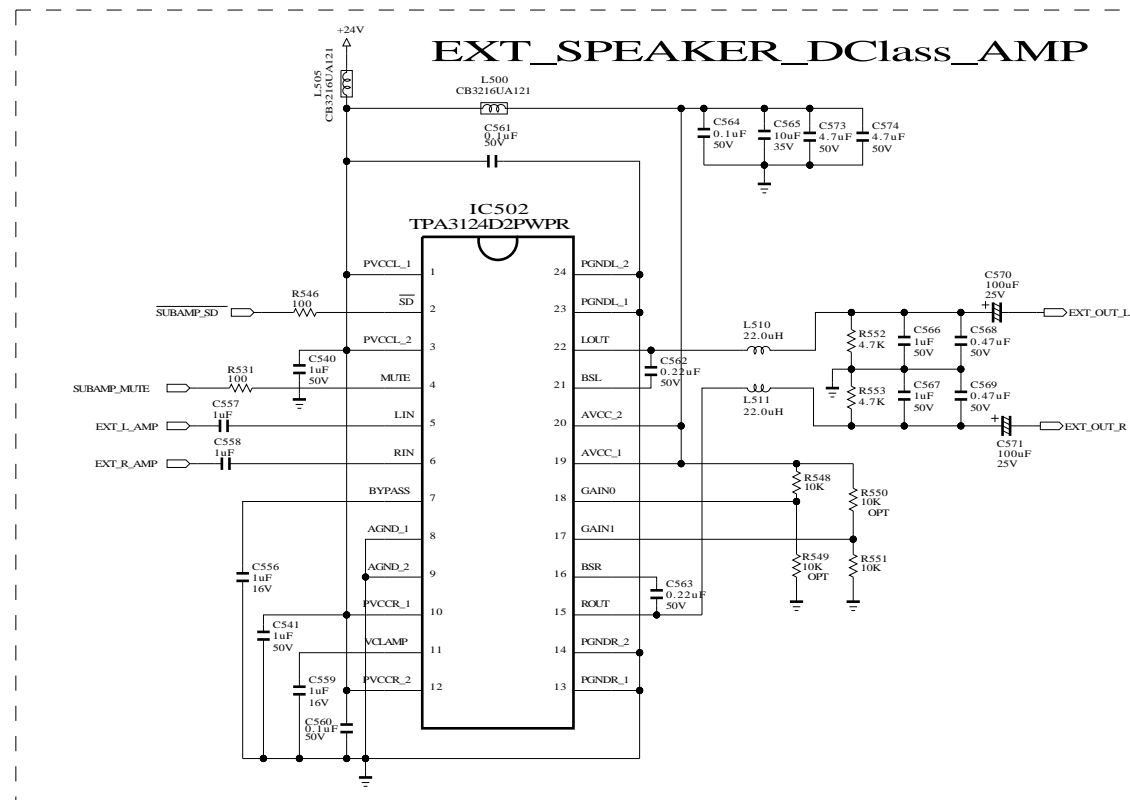
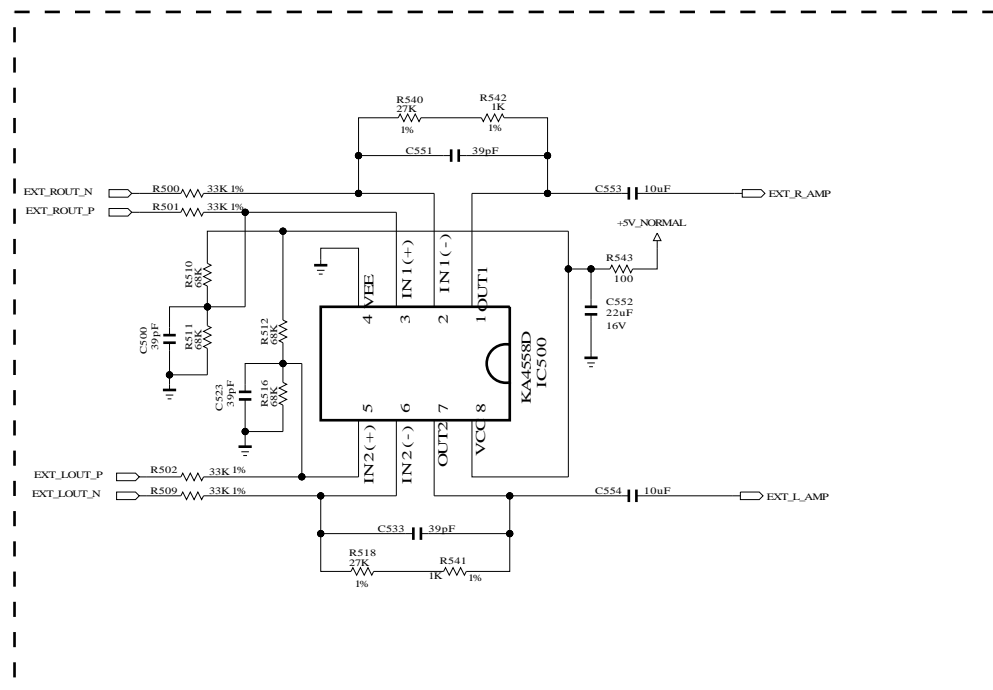
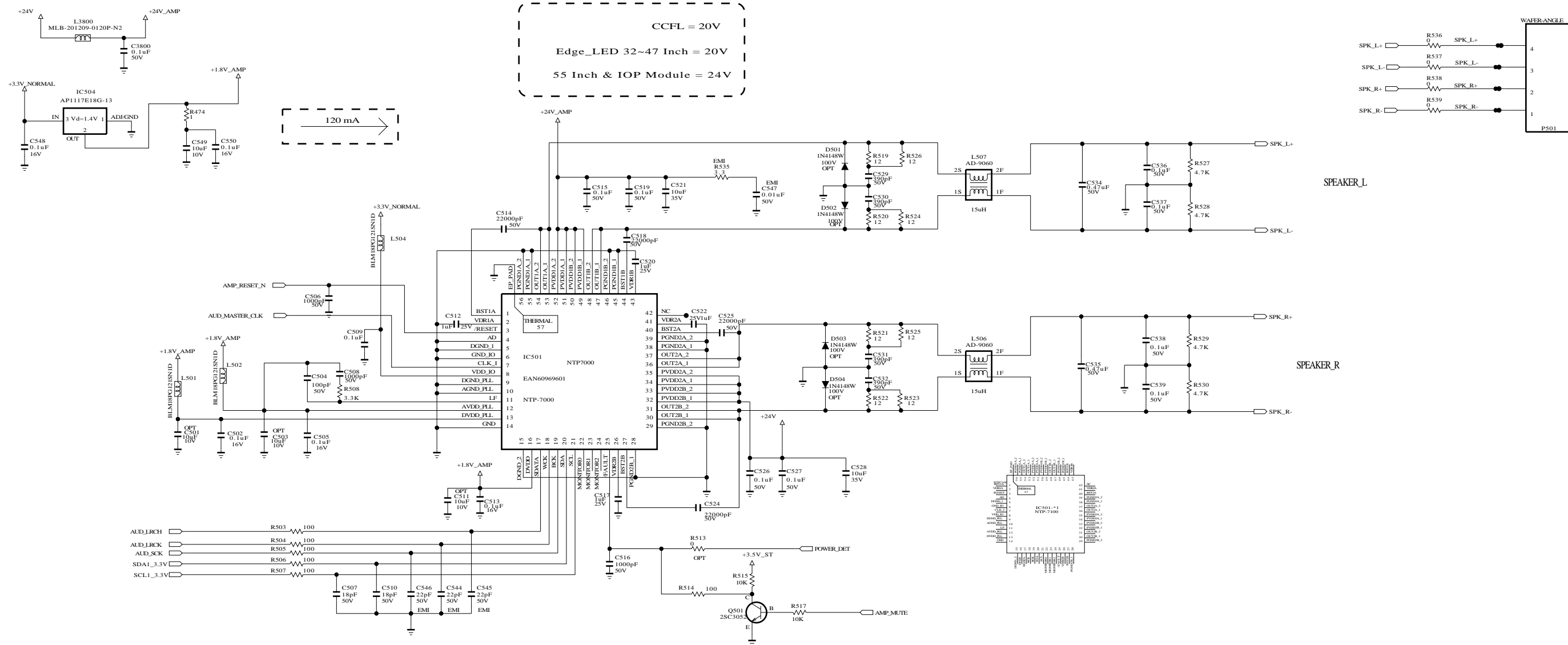
LG Electronics





LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	LVDS WAFER	SHEET	35 /



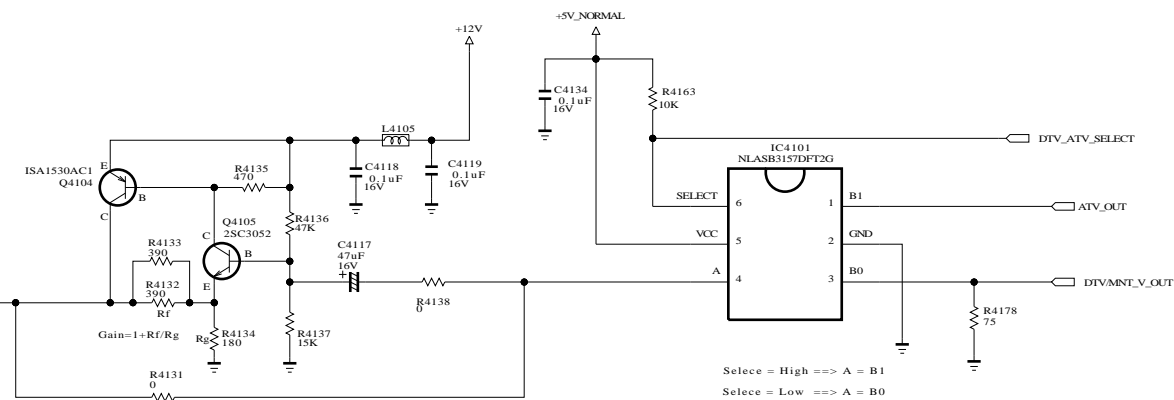
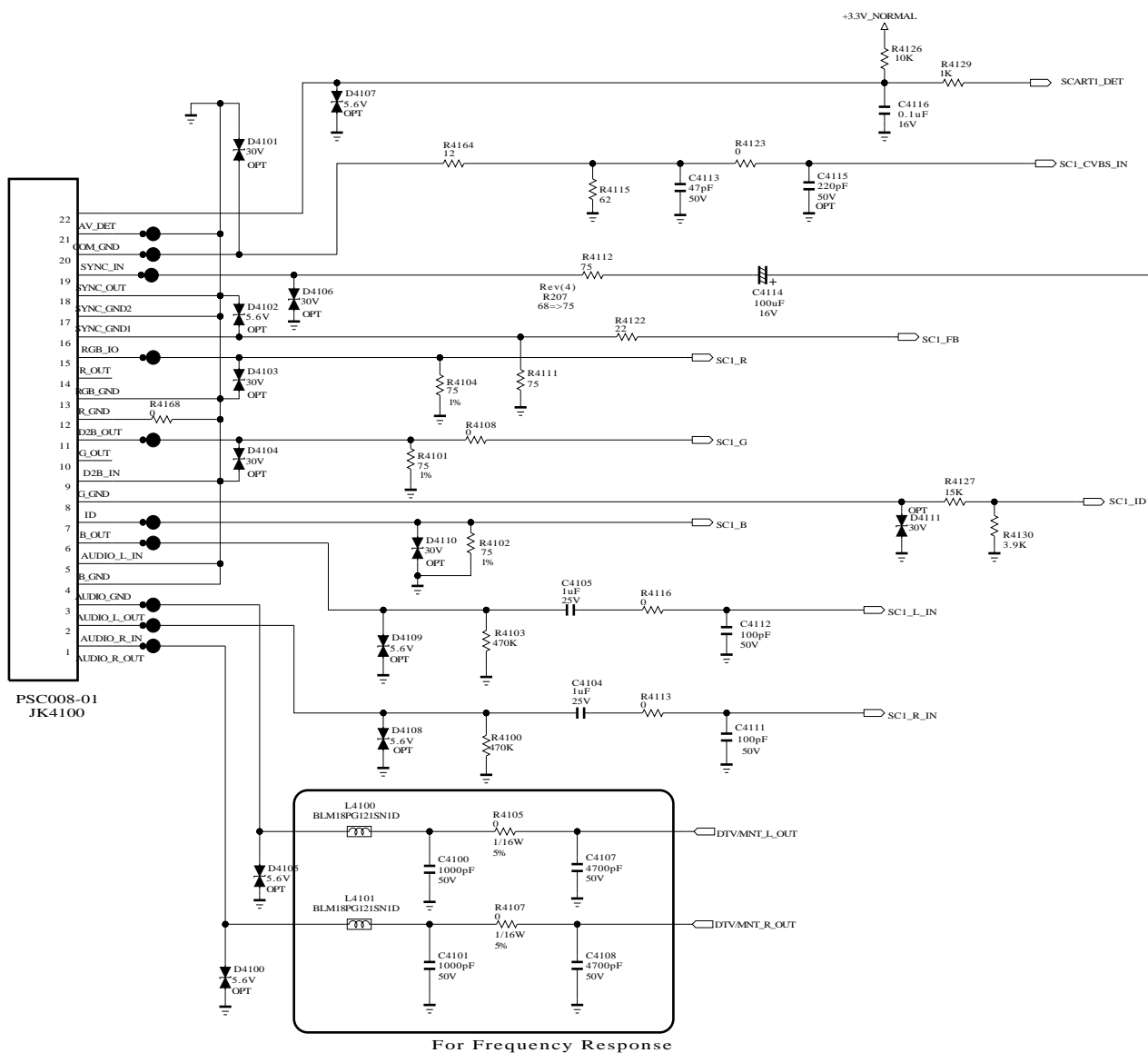
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SECRET
LGElectronics

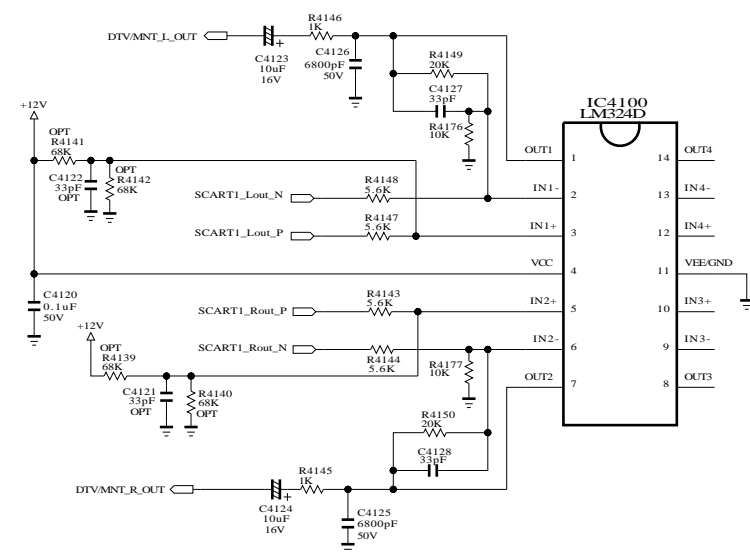
 LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	AUDIO AMP	SHEET	38 /

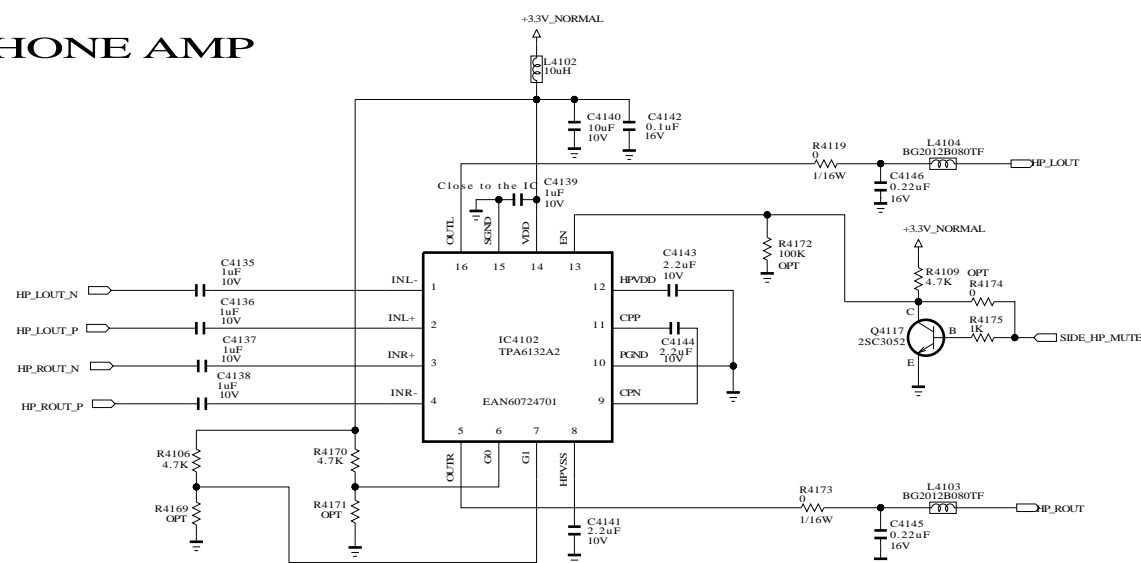




Audio Out Amp EU_SCART [OPT]



EARPHONE BLOCK

EARPHONE AMP



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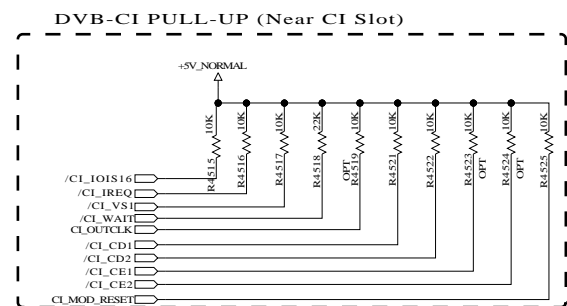
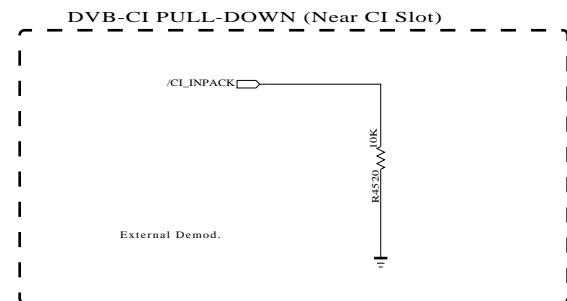
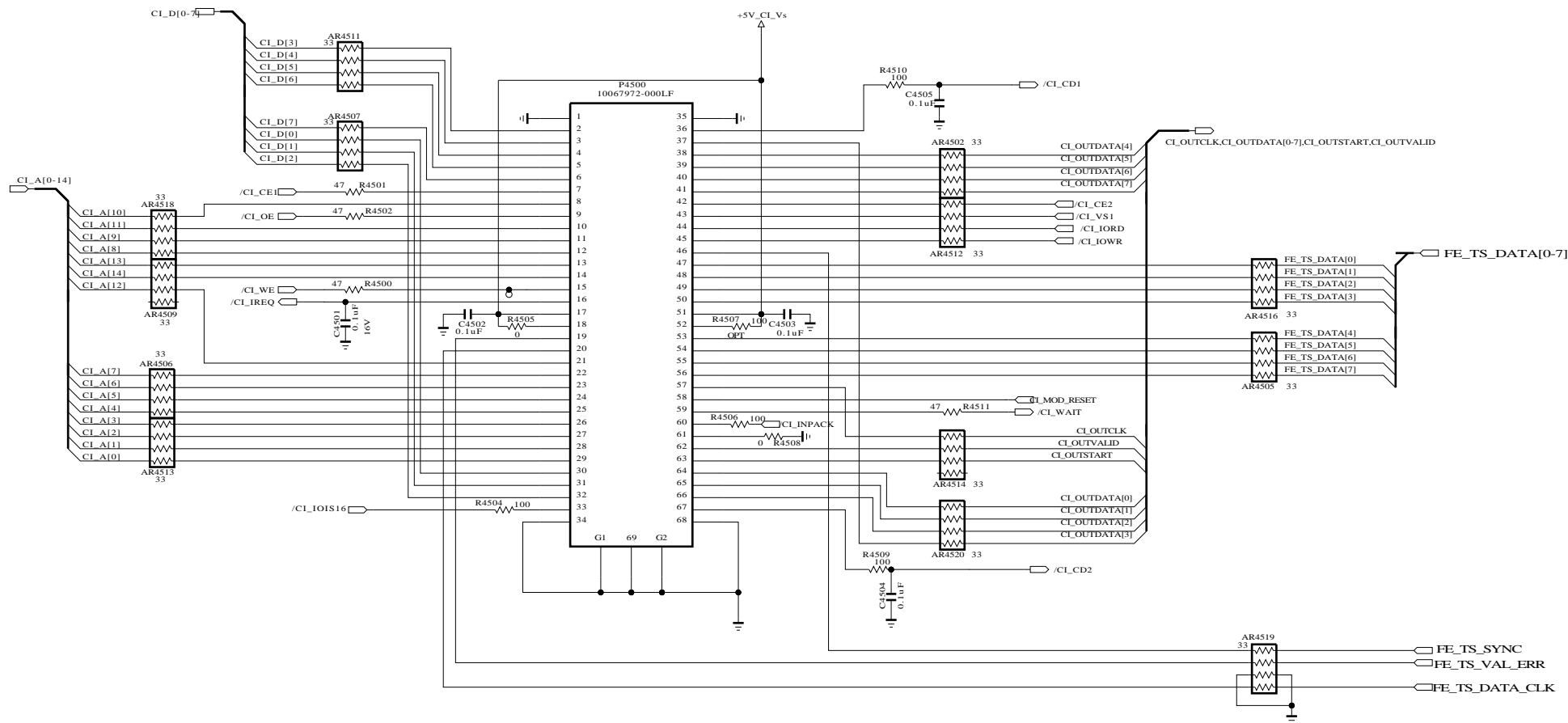
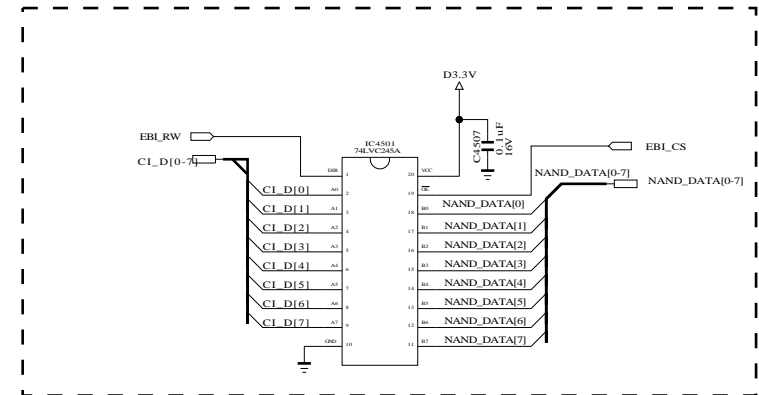
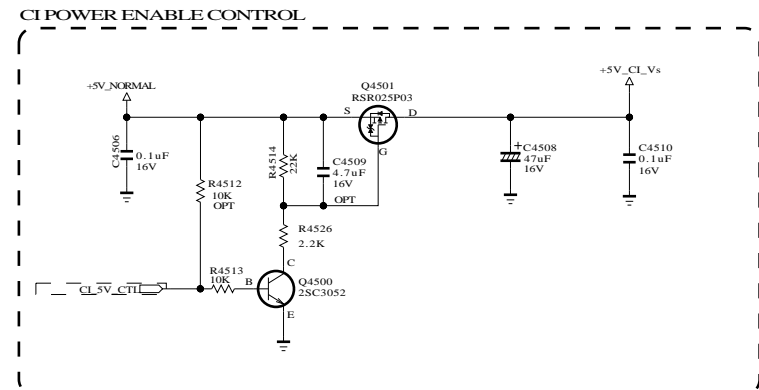
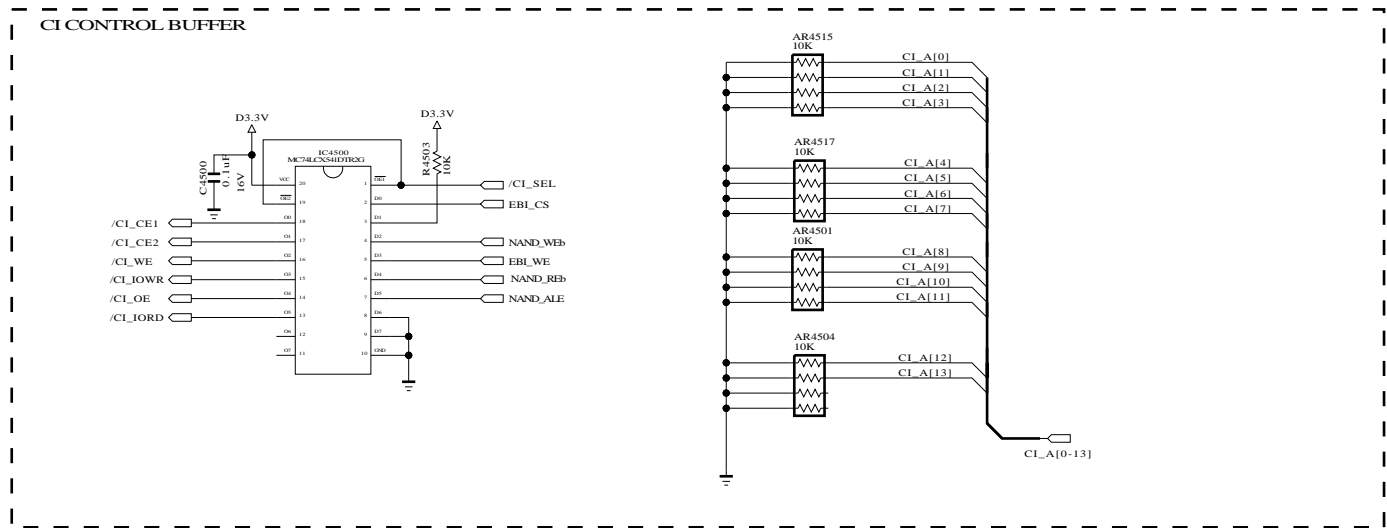
SECRET

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 LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	SCART&HP	SHEET	41 /



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SECRET
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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.01.23
BLOCK	PCMCi	SHEET	45 /

